

# PERFORMANCE TESTING - LEADING ASSET MANAGEMENT COMPANY

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## PERFORMANCE TESTING - LEADING ASSET MANAGEMENT COMPANY

CASE STUDY

SOFTWARE TESTING

RISK &amp; AUDIT SERVICES

INFORMATION SECURITY

### 1.0 Snapshot

#### 1.1 Industry Type

A premier Asset Management Company in India's Mutual Fund industry

#### 1.2 Business Challenges

- To identify bottlenecks, validate hardware architecture simulate the live environment and predict response times.
- To simulate and capture response time up to 1000 concurrent users.
- To perform Capacity Planning, Performance Testing, Performance Monitoring and Hardware Sizing

#### 1.3 AUDITime's Solution

- The system architecture was studied & documented.
- 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.
- Optimization needed at application layer, database layer and network layer were identified & documented.
- Minor improvement in CPU and Memory of the servers was undertaken thereby saving expensive upgrades.
- Huge upfront infrastructure cost was reduced considerably due to right hardware sizing.

### 2.0 Client Requirement Overview

The AMC was expecting a large number of users to use Intranet/Internet based applications in future. These applications would be cascaded to various user groups across India. The company developed an Intranet Portal with the help of an external vendor as per their requirements and this was made accessible through the intranet, based on the access rights given to users of group companies through login credentials. This module was accessible over the LAN. The users from various branches of the client and its group companies could access Statement of Accounts of investors using web services and could also track their portfolio details, transaction details, etc.

### 3.0 Business Challenges

The application performance and scalability were vital aspects that had to be measured. Hence the job of identifying the bottlenecks and their root cause was imperative and challenging. Also, 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 hardware architecture simulate the live environment and predict response times.

### 4.0 Technology Challenge

The applications used a lot of custom controls which made it very difficult to automate them 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 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 structured and reportable format was also a tedious and time consuming task.

### 5.0 AUDITime's 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 real life scenarios 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 compared with resource utilization on the

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application server and the database server. A second round of performance tests was then run on the application. The two result sets were compared & analyzed to pinpoint bottlenecks. Using the tool, the 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 etc. were analyzed and reported.

### 6.0 Business Benefits

- At the very first execution the team of testers had found that the application could not scale up beyond 10 concurrent users. After performing a root cause analysis and suggesting changes at the application layer and server layer, the system could subsequently scale up to 1000 concurrent users and meet the

5 second average response time for 500 concurrent users.

- With the performance test suite, there was early identification of some major application defects and architectural issues thus reducing the cost of change and managing the system considerably.
- Improved the quality from a user's perspective, by forecasting the load and stress on critical systems for various bandwidths 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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