

## Have those nightmares about poor system performance gone away yet?

As technology advances, end-users continuously demand more: more features, more reliability, and more performance. Performance has become critical to the success of any product / application. Today, no user is willing to wait for more than a few seconds for the application to respond. With increasing users this can quickly turn into a nightmare for IT and engineering teams.

Often, performance parameters are addressed too late in the software development lifecycle or worse, as an afterthought. There have been many instances of software products / applications that have met functional requirements but failed to meet performance and hence, enduser expectations. Such problems are always expensive as end-user dissatisfaction and the cost of the engineering solution can quickly snowball especially for a system that is already in production. Often, even for a system in production, a proactive approach to identifying and resolving performance hotspots pays rich dividends. Even better is a scenario where a team of performance engineering experts works in parallel with the development team so that the entire system is engineered for performance from the beginning.

Building performance right at the start of product /application lifecycle saves a lot of time, costs, and efforts during and after the release.

The following case study illustrates how one of our clients proactively approached this situation and ensured that performance hotspots were identified and resolved ahead of the actual increase in user load.

The client was a leading provider of automated sales and tax solutions for global enterprises. Its tax-engine product provides a flexible platform for automating all aspects of sales, use, and value-added tax compliance.

The client wished to convert the usage model from being a pure hosted application to a true SaaS application. In preparation for this move to an on-demand SaaS model, the client proactively decided to analyze and tune the product before opening the floodgates of user-load. The client enlisted MindTree's services to execute a performance-engineering project

with an objective of identifying, resolving and optimizing the product's performance parameters.

The primary objective of the project was to determine the breaking point of the product as it was migrated to a SaaS-based model. In the existing model, the only direct interaction that end-users had with the system was through SOAP-based web-services model that the customers used to upload transactions onto the system.

MindTree executed the project in two phases. In Phase 1, the MindTree team worked closely with the client's engineering and business teams to create the requirement specifications for the project. This included the definition of workload scenarios a critical input to modeling and analyzing system performance. In Phase 2, the project was executed by a 6-member team: 1 near-shore at MindTree's Santa Clara office, USA, and 5 offshore at MindTree's Bangalore office in India.

The test environment was hosted by the client and was 1X of the production environment with minor variations, such as 8 CPUs for the database server instead of 16 CPUs as present in the test environment. MindTree team connected to the test environment remotely, through a Virtual Private Network (VPN).

As a part of this project, MindTree team defined, built, optimized, and measured the application's performance.

How fast is fast enough?

How do you define and manage performance?

Customer's primary objective was to determine and optimize the breaking point of their SaaS based application

## Performance Definition

### How fast is fast enough?

Typically, companies struggle to define what they mean by “good performance” for their product.

The key activities executed as part of this process are:

- Working collaboratively with the client to setup the test infrastructure
- Defining
  - Workload characteristics
  - User-scenarios along with user-loads and data volumes
- Establishing performance baselines
  - On the application for identified scenarios
  - On the database for identified data volumes

## Performance Measurement

For many, performance measurement is a bunch of metrics that may or may not be relevant to the defined performance. MindTree's measurement metrics are aligned with the performance definition and directly impact a client's experience. In the above case, MindTree aligned business priorities with metrics measurement so that the performance engineering team was aware of the important priorities. The analysis of test results was focused accordingly.

## Performance Optimization

Once performance was defined, the next step was to simulate the defined workload and analyze the current performance. Based on the defined performance targets and what the analysis revealed, the team defines ways to optimize performance.

The key activities executed as a part of this process are the following:

- Analyzed
  - Code profiling
  - Database profiling
  - Application server configuration
  - Database server configuration

- Executed performance load and stress tests
  - Gathered execution statistics
  - Test script creation and automation
  - User ramp-up/ramp-down load test
  - Data volume tests
  - Baseline tests
  - SOAP and UI load tests
  - Isolated component tests
- Resolved and optimized
  - Performance bottlenecks
  - ETL and critical SOAP operations
  - System infrastructure

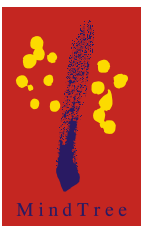
Key deliverables from MindTree included:

- Requirements specification
- Test strategy
- Data generation and loading scripts
- Test execution report
- Test analysis report
- Recommendations

MindTree received a level 5 rating for its extensive expertise, well defined processes, and significant value addition. Besides providing technical value addition to the product, following are the key business advantages that MindTree delivered to the client:

- Reduced costs through optimization of system resources
- Reduced operational overheads caused by performance problems
- Ensured optimum performance of the product under peak loads and backed it up with test data
- Preempted costs on system maintenance post product release
- Released the product on time and as per schedule

A right outlook for product performance along with the assistance of an expert enables the development of a high performing product that saves significant overheads in addition to maximizing investment. Most importantly it increases your client retention rate and satisfaction.



### ABOUT MINDTREE

MindTree Ltd. is a global IT Solutions Company specializing in IT Services, Product Engineering, Infrastructure Management and Technical Support (IMTS), Independent Testing and Knowledge Services. MindTree partners with its clients to create a transparent, value-based relationship. Our people build innovative solutions in a wide range of technology domains that enable our customers to succeed in their business goals.