CASE STUDY

stag

Pre-deployment Performance Evaluation of Web-based Product

STAG certifies an eLearning product 'deploy-ready' after extensive LSPS evaluation, enabling our partner to successfully deploy it at the world's largest publicly funded health services organization.

▶ Domain - Health Care

▶ Technology - Web-based eLearning LCMS, Microsoft 2003 Server and Cold Fusion 8, Web Server with Database Server (SQL Server 2005)

Tools - JMeter, AdventNet AppManager

CUSTOMER AND PRODUCT BACKGROUND

The customer is one of the world's largest publicly funded health services providers based out of the UK, employing more than 1.7 million people, including 120,000 hospital doctors, 40,000 general practitioners, 400,000 nurses, and 25,000 ambulance staff.

The product in question is an eLearning product developed by our UK partner. This tool covers a wide range of training needs and learning competencies to support the implementation and development of an information governance framework within an organization.

PROBLEM STATEMENT

Our UK partner sought our expertise in LSPS evaluation of the product, as desired by the customer before its deployment at the customer's place, for the following:

- Load and performance capability
- Ability to withstand concurrent loads
- System scalability
- Identification of potential bottlenecks (hardware, software, or network)

An estimated 37,500 concurrent users were expected at peak usage times.

SOLUTION

The STAG team created the necessary test environment, developed a scalable automation framework, created a load profile, developed performance test scripts, and created test data to test the eLearning application for loads of 15,000 and 20,000 respectively, using JMeter. Server side resources like CPU/Memory statistics of database and application servers were monitored using AdventNet AppManager. Think time was considered between every transaction to ensure that the tests were realistic. In all, two test cycles were executed by the team.

▶ Number of users: 15,000
Bandwidth consumed: 31-50 Mbps

▶ Number of users: 20,000
Bandwidth consumed: 40-50 Mbps

The performance metrics for the tests focused on end-user response times and resource utilization (CPU/memory). Based on this, the STAG team identified major suspect areas that could pose performance challenges and resolved them during the multiple simulated tests conducted on the application. The major suspect areas identified included:

• High CPU utilization, up to 90%, of the DB server
• Database deadlocks while the course data was being updated
• Inconsistencies in the frequency of the course update sent by the application
• Discrepancies in concurrency during a bulk upload scenario

Based on the test reports, the STAG team made the following recommendations that would help achieve the performance objectives of the customer.

• A minimum of 31 Mbps and 40 Mbps network lines for 15,000 and 20,000 users respectively
• Web server CPU capacity upgrade to a dual core processor or to a CPU having two processors
• Reduction of file size (GIF, JPG, etc.) and file compression (PDF, PPT, audio, etc.) to improve further the network utilization of the bandwidth, given that most eLearning course transactions involve a large volume of image downloads

OUTCOME AND VALUE ADDITIONS

The evaluation by the STAG team resulted in the product being certified to handle up to 20,000 users concurrently with no degradation in performance, which greatly enhanced the deployment confidence of the customer.

STAG's value addition was not limited to the technical aspects alone, it also included recommending the suitable hardware/network resources required to support the current and future load and performance requirements.