



Automated Functional and Performance Testing

Background

Our client MasterKey Systems has invested significantly in the development of Real Estate Marketing and Property Management system. The system is used to perform all property-related functions and tasks, including real estate marketing, sales, leasing and property management. The system is developed in .Net technology and accesses MS SQL Server database in a Windows environment.

Our client's software testing team was receiving weekly updates of the system in the latter phases of development - prior to implementation. They found it virtually impossible to perform the necessary testing and validation of these updates before the next update was received.

MasterKey System is a critical customer-facing web application for Real Estate companies. It's been around for some time and provides a good service to the Real Estate customers. The motivation for the performance testing project was an imminent expansion in terms of customer numbers and a need to explore the capacity limits of the current application infrastructure. The aim was to establish a baseline model for horizontal scaling of servers at the web, application server, and database tiers.

They also realized that a more consistent approach was needed to properly test each update of the system.

Motivation

The motivation for the automated functional testing was that the software testing team was receiving weekly updates of the system in the latter phases of development - prior to implementation. They found it virtually impossible to perform the necessary testing and validation of these updates before the next update was received.

The motivation for the performance testing project was an imminent expansion in terms of customer numbers and a need to explore the capacity limits of the current application infrastructure. The aim was to establish a baseline model for horizontal scaling of servers at the web, application server, and database tiers.

Client





“The main objective of functional automation is to develop an automated test suite that would give our client the ability to fully regression test the system quickly during the final phases of development as well as after deployment”

“The main objective of performance testing is to determine if the application complies with contracts, regulations, and service level agreements (SLAs)”



“After working with client’s development and testing team, by reviewing requirements documents, demo of the system and by performing manual testing activities, we gain an overall understanding of the system in order to develop a comprehensive testing strategy that would take maximum advantage of automated testing tools”

Objectives

Our client wanted to find a way to perform the testing and validation of these updates to ensure the system was meeting all the functional requirements and was going to be reliable upon deployment, they also want to Stress Test their existing system to found bottlenecks. Xcelliti was asked to help develop a way to automatically test the system quickly and efficiently. The objectives of the project were as follows:

For Functional Automation

- ✘ Business process areas of high priority which needs to be automated are identified, after analysis of the system.
- ✘ Develop an automated test suite that would give our client the ability to fully regression test the system quickly during the final phases of development as well as after deployment
- ✘ Design and build test scripts for system validation that would be highly reusable and inexpensive to maintain

For Performance Testing

- ✘ Determine if the application complies with contracts, regulations, and service level agreements (SLAs).
- ✘ Detect bottlenecks to be tuned.
- ✘ Assist the development team in determining the performance characteristics for various configuration options.
- ✘ Provide input data for scalability and capacity-planning efforts.
- ✘ Determine if the application is ready for deployment to production.
- ✘ Determine Load and Stress points.

Our Approach

The first step that Xcelliti’s Consultants took was to familiarize themselves with the system and its intended functionality. This was accomplished by talking to and working with client’s development and testing team, by reviewing requirements documents, demo of the system and by performing manual testing activities. The main goal of our involvement was to gain an overall understanding of the system in order to develop a comprehensive testing strategy that would take maximum advantage of automated testing tools.

Once the overall testing strategy had been established the following tasks were performed:

- ✘ A Test Plan was developed
- ✘ A system testing environment was set up that could be restored to its initial state after running scripts - which allowed for repeated execution of the regression tests
- ✘ Industry best tools were used for conducting Automated Functional Testing and Performance Testing.
- ✘ Libraries of reusable functions were designed and built so that they could be incorporated into the test scripts in order to minimize maintenance efforts

Results

This project has been very successful. Project objectives were fully met and our client was extremely happy with the results.

Following are the project achievements:

Achieved from Functional Test Automation

- ✘ Our client now has the ability to regression test their Real Estate Marketing and Property Management system in approximately half day using the test scripts our consultants developed. Same level of testing would take several weeks to perform manually and would have an increased possibility of missing defects.
- ✘ Four months after initiating this project, all of the original scripts are still being used to test new releases of the system, and only minimal maintenance has been required to keep scripts updated to work with the new releases.
- ✘ The automated testing strategy that was envisioned and developed for this system has saved thousands and thousands of hours of manual testing. And because so much of the testing effort has been standardized and automated, testers are able to focus their manual testing efforts for new releases on critical areas of the system that have been enhanced with new functionality.
- ✘ Automated testing has reduced the time required to deploy new system functionality, thereby increasing users' overall productivity resulted in improved quality.

Achieved from Performance Testing

- ✘ Enhanced real estate services, allowing hundreds of agents to work easily and deliver an efficient service to customers.
- ✘ Increased customers' satisfaction level, improving efficiencies in terms of response time and service level.
- ✘ Identification of a potential business risks and the Opportunity to address design flaws in the application
- ✘ Identified behavior under various workload patterns including normal load conditions, excessive load conditions, and conditions in between
- ✘ Resource utilization in terms of the amount of CPU, RAM, network I/O, and disk I/O resources your application consumes during the test

Since initiating this project 4 months ago, our client has gained efficiencies in testing, improved system quality, and realized significant cost savings. As a result, our client has increased their investment in automated testing and extends their contract with Xcelliti. to design and build automated testing solutions for many of their critical business systems and also to conduct performance testing in each quarter throughout the year.

“Our client now has the ability to regression test their system in approximately half day using the test scripts we developed. Same level of testing would take several weeks to perform manually and would have an increased possibility of missing defects.”

“The impact of performance testing is enhanced real estate services, allowing hundreds of agents to work easily and deliver an efficient service to customers who increased customers' satisfaction level, improving efficiencies in terms of response time and service level”

