PERFORMANCE TESTING IN THE GREEN ENVIRONMENT FOR A 100% CLOUD-BASED PLATFORM

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ABOUT GEFEN TECHNOLOGIES

Gefen Technologies is an esteemed IT service and IT consulting organization specializing in developing cutting-edge tools and services that optimize the management of financial services.

These solutions operate 24/7, equipping agents from various organizations with a competitive edge. With a focus on delivering a tailored experience, Gefen's intelligent agents empower teams to provide exceptional end-user experience to their customers.

Harnessing advanced algorithms, machine learning, and artificial intelligence, these agents analyze financial data, uncovering valuable patterns and trends. This enables organizational agents to gain insights and receive recommendations that refine their service delivery. Notably, Gefen Technologies' agents are highly adaptable, catering to diverse business needs. They seamlessly integrate into financial business processes or function as a stand-alone tool.

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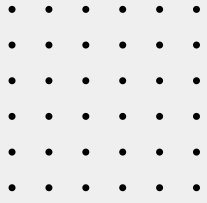
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PROJECT OVERVIEW

Gefen needed feature updates for its platform, where the agent services were being delivered (from 2.0 to 3.0). Its system must be equipped for the increasing traffic and workload. Some conditions that needed to be addressed with stress testing and performance testing are specifically listed below.

- The number of concurrent users the operation (system/platform) can support during peak load for improving the performance of the platform.
- The number of leads submitted during the peak load.
- Measurement of the performance of current infrastructure. Submit the report to stakeholders for review and decision on whether they want to scale the infrastructure.
- Monitor the infrastructure performance with the help of DevOps/Tools while the load and stress tests are executing.
- The durability of the platform under stress conditions.

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SOLUTION

Creating a robust testing environment, employing various criteria, and testing the appropriate scenarios were all critical. Some of the criteria used in this regard for measuring the success rate of the system included the estimation of KPIs (key performance indicators), latency rate, request and response time, business competition rate, hardware metrics, and more. Several test cases were created, including testing the load performance of digital history for the customers, verification of simultaneous conversations happening over different user accounts, and more.

A timeline of approximately 15–19 days was decided for executing these tests. Additionally, the following solutions were implemented within these processes.

1. Multiple iterations (roughly 3–4) were conducted to test login with MM, email campaign creation, email campaign publication, log in with UA, notification verification, and email campaign reception.

2. Load testing was performed on a MongoDB cluster with varying database records ranging from 50,000 to 8,00,000 (for 100 concurrent users) to measure ramp-up data and failure rates.

3. Stress testing was conducted to evaluate the website's response time under high database loads, observing any potential slowdowns compared to lower database loads.

WHY
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At ThinkSys, software testing is one of the key services delivered to clients. There are a variety of testing services that fall under this category. The testing approach used in any project varies from one project to another. However, the comprehensive testing methodology that was adopted in this project is highlighted below.

DEFINING PERFORMANCE OBJECTIVES

This approach involves defining objectives or targets for performance testing. The expected behavior and reaction time of the website (which provides agent services) under various load conditions, which were divided into various classes, were measured with the aid of such objects. Examining the response time, throughput, scalability, availability, and resource consumption are a few examples of these types.

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IDENTIFICATION OF PERFORMANCE SCENARIOS

To simulate the anticipated load and usage pattern of the platform being evaluated, 10 testing scenarios were identified. These hypothetical situations simulated user behavior, which, when triggered, improved system testing. Understanding the business requirements more fully, establishing the user profiles, figuring out user behavior, designing performance scenarios, and prioritizing and verifying those scenarios were some methods that assisted in accomplishing those testing scenarios.

SPECIFYING WORKLOAD

This includes figuring out the kinds and numbers of transactions the platform will be exposed to. 50 concurrent users were introduced initially, then 50 more every time until the platform's capacity was exceeded. Determining the user profile, defining the user scenarios, finding the load profile, calculating the transaction volume, defining the workload model, and setting up the performance measurements are some procedures that assist in determining the workload in performance testing.

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RUNNING THE PERFORMANCE TEST

It is one of the most important processes, and it entails carrying out a series of predetermined actions or transactions to simulate user behavior on the system under test. The procedures for running the scripts included choosing the appropriate tools (such as Apache JMeter and BlazeMeter) for script creation and execution, script recording, script customization, test environment configuration, test parameter configuration, test execution, and test result analysis.

GATHERING DATA AND ANALYZING

This step involves gathering information on the many performance metrics that were considered. Response time, throughput, and resource use during the test were a few of these metrics. It also includes analyzing performance bottlenecks and other problems, including slower response time following the expansion of the database entries. In this testing, there are a few steps that aid in data collection and analysis, including choosing performance metrics, establishing performance monitoring, running the tests, analyzing the results, finding performance bottlenecks, formulating recommendations, and re-testing after the recommendations have been followed.

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CREATING REPORT

The teams at Gefen received reports that provided a thorough breakdown of the testing procedure, including the objectives, methodology used, findings, and suggestions for the future. To provide them with a clear and comprehensive explanation of the performance testing that was done, some of the important parts that were addressed in this report included the test environment, test scenarios, results, and analysis.

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OUTCOME

Gefen embarked on this journey to upgrade its platform and enhance its service offerings. With ThinkSys as their partner, ongoing website maintenance and improvements were ensured. Access to databases, cloud servers, and APIs facilitates Gefen's continuous improvement.

The testing process involved evaluating various essential characteristics, such as API response time, error rates of unsuccessful requests per label, user hits per second, response time versus threads and latencies over time. Notably, the platform's overall performance witnessed notable improvements, with an average throughput rate of 3.5 (for 250 concurrent users) resulting in increased submitted leads from the website.

Throughout the partnership, its success is largely due to the close communication and collaboration between the companies. ThinkSys' unwavering commitment has fostered Gefen's trust in the services provided while enhancing the quality of Gefen's core offerings. ThinkSys played a vital role in system development, QA processes, DevOps implementation, API support, data management, and more, solidifying its position as a crucial contributor to Gefen's success.

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