

# CASE STUDY

## **FIXES AND OPTIMIZATIONS IMPROVE WEBSITE PERFORMANCE**

### **Client Background**

Our client is an independent, specialized, and privately-owned publisher that was founded in 2000. The company is focused exclusively on world languages instructional materials. Its main goal is to provide students with the necessary tools to successfully learn languages both inside and outside of the classroom.

Our client's mission is to create superior quality language programs that boldly integrate text, technology, and media.

**softserve**

## Business Challenge

As a publishing company, the client runs a website that gives students the ability to purchase digital and printed learning materials. With most website purchases occurring in August and early September, the client's customers experienced poor site performance, which caused some users to look for other ways to purchase the learning materials. During these busy times, the client added additional application servers; however, this did not solve the website performance issues.

## Project Description

The client consulted with SoftServe and the team analyzed the product store codebase, architecture, database table structure, database requests, etc. Based on the results of the analysis, the SoftServe engineers developed fixes and optimizations aimed at improving site performance. The team

- Introduced direct page cache
- Initiated refactoring for sub-stores
- Optimized JS and CSS frontend
- Introduced caching for site menu
- Moved session data to Redis
- Optimized the database
- Optimized images

To measure and monitor performance optimization changes, the team tested performance, which included:

- Test scenarios for creation-based Google Analytics and New Relic data
- Test scenario implementations for one JMeter project triggered with probability that corresponds with the user statistics stored in Google Analytics and New Relic
- Ran JMeter project and analyzed results in stages:
  - Tests were run during refactoring to determine if introduced changes improved performance
  - Optimization tests were completed to understand which optimizations or fixes introduced the most performance improvement
  - Final tests of the store version that included all fixes and optimizations

A manual QC was completed to ensure that the optimized version of the store had the same functionality as the initial store version and no bugs were introduced by the suggested changes. The team

- Created a test plan
- Ran exploratory testing and collected test bases
- Created functional test cases to be used for smoke and regression testing
- Tested initial application build-without any optimizations-to collect a list of known issues
- Tested application during different phases of optimization-with smoke or functional testing + ad-hoc
- Provided defects tracking-posted and verified defects
- Tested final version of product with all optimizations
- Prepared test deliverables including test plan, test case specifications, test execution report, defects list, etc.

## **Value Delivered**

During the project, SoftServe developed an optimized version of the store application. The team tested the new version and the performance results showed the average page load time improved by 28.5%, an 18.3% improvement on 99% line, and the application server CPU utilization was reduced by 50% compared to the initial version.

In addition to delivering the optimized application code, the SoftServe team provided detailed reports on the optimization work completed, as well as the performance and manual testing parts of the project.

## ABOUT US

SoftServe is a digital authority that advises and provides at the cutting-edge of technology. We reveal, transform, accelerate, and optimize the way enterprises and software companies do business. With expertise across healthcare, retail, media, financial services, software, and more, we implement end-to-end solutions to deliver the innovation, quality, and speed that our clients' users expect.

SoftServe delivers open innovation—from generating compelling new ideas, to developing and implementing transformational products and services.

Our work and client experience are built on a foundation of empathetic, human-focused design that ensures continuity from concept to release.

We empower enterprises and software companies to (re)identify differentiation, accelerate solution development, and vigorously compete in today's digital economy—No matter where you are in your journey.

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