



# Testing EdTech platforms for full performance potential

QA  
Services

Success Story

## Status Quo

A leading Edtech platform, powered by AI engine was all set to provide digital education experiences to students and a wide audience of learning aspirants for professional skills and higher education. The portal connects over 2 million schools and leverages analytics to deliver personalized learning outcomes for end users. The app is envisioned to be scalable across education markets, devices, and data by delivering content to a diverse learning audience.

## Application

The application is an AI-based education platform that delivers learning content, features guided practice, recommendations, and in-depth analytics. This java based application is available on Web and Mobile (Android and iOS) and is deployed in Kubernetes environment. With over 3 million monthly visitors on the app, the engagement is enormous.

## Business Challenges

- Conducted maturity assessment of the application and API requests for reliability and performance.
- Defined workload model based on production volume transactions and also research of similar products to arrive at peak load of 100K
- Proposed load testing tool: Locust, based on tool feasibility analysis to test 100K concurrent users. The tool was evaluated for its event driven testing for scaling users
- The use case to support distributed and scalable number of users in a single process is taken into consideration to conduct tool-based tests. Locust is deployed using Kubernetes engine service provided by Google Cloud and Azure
- API request and response times against user load are tested by progressively adding users and assessing performance, until the target concurrent load is achieved
- Locust test metrics were captured via CSV file. Server metrics were monitored via New Relic APM tool and individual pods servers in Kubernetes environment was monitored via Prometheus & Grafana tool

- API response stability is verified in Kubernetes environment (deployment)
- Reported Performance Bottlenecks in JIRA (defect management) and provided with recommendations to meet industry standard SLAs. Key recommendations:
  - Hardware Sizing - Number of Pods required (Pods Sizing) for the application server to support 100K users
  - SQL tuning: Based on analysis of Queries and transaction traces from New Relic APM tool, high response times of 3 secs and above are identified. Response times have significantly improved to 1 second, after executing recommended SQL tuning methods.

## Application

Online Tutoring

## Domain

Edtech

## Technologies

Locust, JIRA

## Solutions

Load Testing

## Key Highlights

- Consultative approach to QA –API Load testing by profiling the behavior of the application using the monitored performance metrics
- Load testing for 100K concurrent users and reported performance metrics using Locust tool
- Performance improved with less than 1% error instances to concurrent access after regression

## Business Impact

- Less than 1% failed concurrent access of the application after implementing performance recommendations and regression. (down from 7-8%)
- Achieved aggressive API load SLAs of 1 second post query tuning
- Consultative approach to QA –API Load testing by profiling the behavior of the application using the monitored performance metrics and providing with actionable recommendations
- Realistic test scenarios and iterative testing to accomplish standard responsiveness of the application to high volume transactions/100K+ spike load instances
- Use of open-source tools: No additional investment in gathering metrics. The team contributed to adding the comprehension layer to interpret the tool-generated results and translate them into insights



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