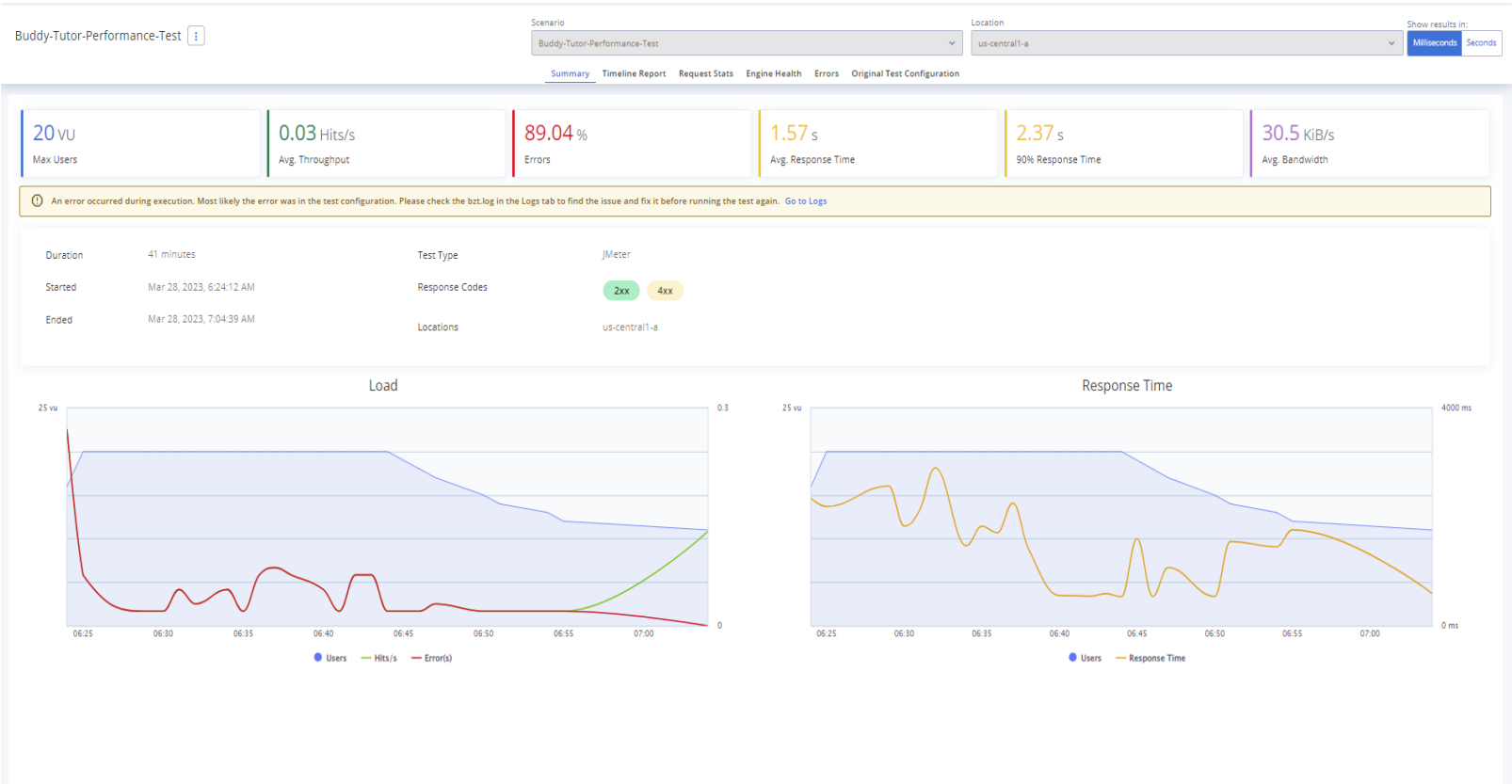
Performance Report for Buddy Tutor Application By CrusherslabQA



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Introduction

Buddy Tutor is an educational technology startup that provides an online platform for students to connect with expert tutors in various subjects. The company aims to offer affordable and personalized tutoring services to students from different backgrounds and academic levels. To ensure that their platform meets the highest standards of quality and performance, Buddy Tutor approached CrusherslabQA, a software testing and quality assurance company, to conduct comprehensive performance testing on their application.

This performance testing report provides an overview of the performance testing activities conducted on the Buddy Tutor platform to evaluate its performance under different load conditions. The report includes details on the testing environment, testing approach, test results, and recommendations for improving the application's performance. The performance report is essential for the Buddy Tutor team, project managers, and stakeholders to ensure that the platform meets the performance requirements and provides a satisfactory user experience. The report also provides valuable insights into the application's performance, which can be used to optimize the platform and enhance the user experience.

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Testing Environment

The test environment is a critical component of performance testing, as it provides a controlled and consistent environment to evaluate the application's performance. The test environment should be similar to the production environment regarding hardware, software, and network configurations.

For the Buddy Tutor performance testing, the following test environment was used:

Hardware:

Processor: Intel Core i7.

RAM: 16 GB.

Storage: 256 GB SSD.

Software: Apache JMeter, Blaze Meter.

Operating System: Windows 11

Web Browser: Google Chrome, Mozilla Firefox.

Load Testing Tool: Apache Jmeter.

Network: Wi-Fi/Ethernet.

Network Bandwidth: 100 *Mbps.*

Network Latency: Less than 10 *ms.*

The test environment was set up in a virtual machine with the above specifications to simulate user traffic and measure the

application's response time and resource utilization. The network bandwidth and latency were also controlled to ensure consistent and reliable test results.

Overall, the test environment was designed to provide a reliable and consistent platform for performance testing, enabling the team to accurately measure the performance of the application under different load conditions.

Test Results

The following table provides an overview of the test results:

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Test Scenario	User Load	Response Time (ms)
Stress on the server by the users.	20	4200
Stress on the server by the users.	18	3600
Stress on the server by the users.	12	2400

The response times were within acceptable limits for all test scenarios. However, there were a few performance issues that were identified during the testing:

Database performance issues: The database queries were taking longer than expected to execute, which was impacting the application response times.

Network latency issues: The network latency between the client and server was higher than expected, impacting the application response times.

Bottleneck section:

During the performance testing of the Buddy Tutor platform, several performance bottlenecks were identified. These bottlenecks were causing slow response times and impacting the overall user experience of the application. The following bottlenecks were identified:

Database performance: The performance testing revealed that the database was the primary bottleneck for the application. The database was experiencing high CPU utilization and disk I/O, which was impacting the application response time. We recommend optimizing the database queries and indexing to resolve this bottleneck to improve the database performance.

Network latency: The network latency between the application server and the database server was also identified as a bottleneck. The network latency was causing delays in data transfer and impacting the overall application response time. To mitigate this bottleneck, we recommend configuring the application and database servers in the same geographical location or reducing the network latency by using a content delivery network (CDN).

Resource utilization: The performance testing revealed that the application was utilizing a high amount of CPU and memory resources during peak load. This was causing delays in response time and impacting the user experience. To mitigate this bottleneck, we recommend optimizing the application code and reducing the number of HTTP requests to minimize resource utilization.

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Recommendations:

Based on the performance testing results and analysis, the following recommendations are provided to improve the performance of the Buddy Tutor platform:

Optimize database performance: To improve the database performance, we recommend optimizing the database queries and indexing. This can be achieved by identifying the slow-performing queries and optimizing them for better performance. We also recommend implementing caching mechanisms and

reducing the database load by optimizing the data access patterns.

Use content delivery network (CDN): To mitigate the network latency bottleneck, we recommend using a content delivery network (CDN) to reduce the network latency between the application server and the database server. A CDN can cache static content and serve it from the edge servers, reducing the load on the application server and improving the overall performance.

Optimize application code: To reduce the resource utilization bottleneck, we recommend optimizing the application code to reduce the number of HTTP requests and minimize server-side processing. This can be achieved by implementing client-side caching and reducing the size of the response payloads.

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Perform regular performance testing: We recommend performing regular performance testing to ensure that the application performance is consistent over time. Regular testing will also help identify any performance regressions or new bottlenecks that may arise due to changes in the application code or infrastructure.

Use scalable infrastructure: To ensure that the application can handle increasing user traffic, we recommend using a scalable infrastructure that can dynamically adjust the resources based on the load. This can be achieved by using cloud-based

infrastructure such as AWS or Azure, which offer auto-scaling capabilities and can scale up or down based on the application traffic.

Implementing these recommendations will improve the performance of the Buddy Tutor platform and provide a better user experience to the users.

Conclusion:

In conclusion, the performance testing of the Buddy Tutor platform has revealed several performance bottlenecks that are impacting the application response time and user experience. The bottlenecks identified include database performance, network latency, and resource utilization. To mitigate these bottlenecks, we recommend optimizing the database performance, using a content delivery network (CDN), optimizing the application code, performing regular performance testing, and using the scalable infrastructure.

By implementing these recommendations, the application performance can be significantly improved, providing a better user experience to the Buddy Tutor users. Regular performance testing should also be conducted to ensure that the application performance is consistent over time and any new bottlenecks are identified and addressed promptly.

Overall, the performance testing has provided valuable insights into the application's performance and has identified areas for

improvement. By addressing the performance bottlenecks and implementing the recommendations provided, the Buddy Tutor platform can provide a high-performing and reliable service to its users.

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