

Performance report

Assignment 2

Introduction:

For assignment 2, the distributed system is tested on the cloud using CloudLab. On Cloud Lab, every server component is operating on a different instance. For a few chosen functionalities, which are detailed below, the system's average response time and average throughput are calculated:

- Get seller rating on the seller side
- Get seller rating on the buyer side
- Add items to the cart on the buyer side

Results:

These functionalities are chosen from a few methods on the buyer and seller client sides to provide a rough estimate of the overall system's performance. The values are mentioned in the table below:

For the seller:

Instances	Avg Response Time	Avg Throughput
1	90 ms	84.17 API invocations per second
10	99 ms	23.81 API invocations per second
100	146 ms	7.53 API invocations per second

For the buyer side:

Instances	Avg Response Time	Avg Throughput
1	92 ms	54.5 API invocations per second
10	102 ms	14.64 API invocations per second
100	174 ms	3.31 API invocations per second

Conclusion:

The performance assessment of the distributed system offers valuable insights, revealing notable trends as the number of instances increases, impacting both average response time and average throughput. On the seller side, the average response time climbs from 90 ms for a single instance to 146 ms for 100 instances, signifying increased response duration under higher system loads. Concurrently, the average throughput diminishes from 84.17 API invocations per second for a single instance to 7.53 API invocations per second for 100 instances, indicating reduced concurrent request handling capabilities. The buyer side exhibits a parallel pattern, with average response time rising from 92 ms to 174 ms and average throughput decreasing from 54.5 API invocations per second to 3.31 API invocations per second under the same instance variations. These trends underscore the necessity for adept load balancing and resource allocation strategies to sustain optimal performance with scalability. Additionally, they emphasize the significance of robust database management and communication protocols for consistent system performance. While the current system demonstrates reasonable performance within its architectural framework and operational assumptions, further optimization may enhance its capacity to handle increased loads and ensure database consistency.