

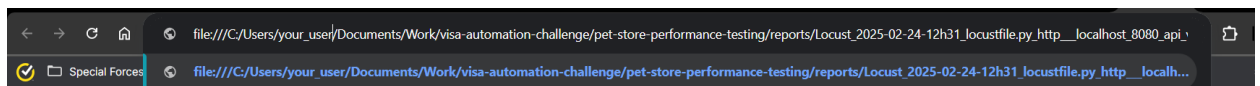
API Performance Testing Report – Pet Store APIs

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1. Introduction

This report analysis presents the results of performance testing conducted on the Pet Store APIs using **Locust**. The objective of this test suite was to evaluate the system's ability to handle requests under different load conditions, identify potential bottlenecks, and assess its overall reliability.

To open and see the reports, copy and paste the file location in a browser search bar, as follows:



Then hit enter.

Please find the report file under this directory:

/pet-store-performance-testing/reports

2. Test scope and coverage.

Pet Store APIs is composed of three main endpoints:

1. Pet
2. Store
3. User

For each endpoint we've created performance tests to assess the following operations:

- **Create (POST Requests)** – Measures how efficiently the system handles data creation.
- **Data Retrieval (GET Requests)** – Evaluates response times for fetching data from the API.

The test was executed through Locust UI, and the report was exported in .html

3. Performance Test Summary

Key Metrics:

Metric	Value
Total Requests Sent	5101
Total Failures	9
Failure Rate	0.18%
Average Response Time (ms)	16.48
Minimum Response Time (ms)	2
Maximum Response Time (ms)	212
Requests Per Second (RPS)	16.99
Failure Rate per Second	0.03

Percentile Distribution of Response Times:

Percentile	Response Time (ms)
50th (Median)	6
60th	7
70th	9
80th	46
90th	51
95th	53

99th	62
100th (Worst Case)	210

4. Results Analysis

- **High Request Throughput:** The system maintained an average 16.99 RPS, which is a solid rate for API handling.
- **Low Failure Rate:** Only 9 requests failed out of 5101 (0.18%), indicating a stable API.
- **Fast Response Times:** The 50th percentile (median response time) is 6ms, meaning half of the requests completed in 6ms or less.

4.2 Potential Bottlenecks and Concerns

- **Latency Spikes:** The 100th percentile response time reached 210ms, which is significantly higher than the 99th percentile (62ms). This suggests outlier requests experiencing delays, possibly due to backend processing or resource contention.
- **Response Time Degradation Beyond 80th Percentile:** While 70% of requests were processed under 9ms, response times jumped sharply beyond the 80th percentile (46ms), indicating potential strain under heavier loads.

5. Recommendations for Optimization

- **Investigate Outliers:** Identify the cause of 210ms response times – could be DB queries, cache misses, or thread contention.

- **Optimize High-Percentile Response Times:** Since 90% of requests are still fast (under 51ms), focus on optimizing the slowest 10% to reduce latency spikes.
- **Database Indexing:** If database queries are involved, ensure indexes are optimized for frequently accessed data.

6. Conclusion

The Pet Store API performed well under load, with low failure rates and fast response times for the majority of requests. However, latency spikes beyond the 80th percentile indicate potential backend inefficiencies.

Action Plan:

- Investigate slowest responses (100th percentile).
- Optimize database/cache strategy.

This concludes with the API performance testing report.

APENDIX:

In case for any reason the reader can't open the report file, here's some highlights of its content:

Final ratio

Ratio Per Class

- 100.0% PetStoreUser
- 7.4% createOrder
- 7.4% createPet
- 7.4% createUser
- 7.4% getOrdersById
- 7.4% getPetById
- 18.5% getPetsByStatus

- 18.5% getStoreInventory
- 7.4% getUserByUsername
- 18.5% getUserLogin

Total Ratio

- 100.0% PetStoreUser
- 7.4% createOrder
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- 18.5% getPetsByStatus
- 18.5% getStoreInventory
- 7.4% getUserByUsername
- 18.5% getUserLogin

Request Statistics

Type	Name	# Requests	# Fails	Average (ms)	Min (ms)	Max (ms)	Average size (bytes)	RPS	Failures/s
GET	/api/v3/user/login?username=9975&password=12345	9	0	4.51	3	6	43	0.03	0
	Aggregated	5101	9	16.48	2	212	52964	16.99	0.03

Response Time Statistics

Method	Name	50%ile (ms)	60%ile (ms)	70%ile (ms)	80%ile (ms)	90%ile (ms)	95%ile (ms)	99%ile (ms)	100%ile (ms)
GET	/api/v3/user/login?username=9975&password=12345	4	5	5	6	6	6	6	6
	Aggregated	6	7	9	46	51	53	62	210

Failures

Failures Statistics

# Failures	Method	Name	Message
1	GET	/api/v3/pet/9640	HTTPError('404 Client Error: Not Found for url: /api/v3/pet/9640')
2	GET	/api/v3/pet/findByStatus?status=available	HTTPError('500 Server Error: Internal Server Error for url: /api/v3/pet/findByStatus?status=available')
1	GET	/api/v3/store/inventory	HTTPError('500 Server Error: Internal Server Error for url: /api/v3/store/inventory')
1	GET	/api/v3/store/order/4537	HTTPError('404 Client Error: Not Found for url: /api/v3/store/order/4537')
1	GET	/api/v3/store/order/6069	HTTPError('404 Client Error: Not Found for url: /api/v3/store/order/6069')
1	GET	/api/v3/user/3358	HTTPError('404 Client Error: Not Found for url: /api/v3/user/3358')
2	GET	/api/v3/user/6087	HTTPError('404 Client Error: Not Found for url: /api/v3/user/6087')

Charts

Charts

