Performance Testing Report

* Project Name : Contact List App
* Date : 31 May 2025
* Tested by : Puti Andini
* Environment : Public API
* Tools Used : Apache JMeter 6.6.3
* Device / OS : macOS sequoia15.4.1
* Target Endpoint :

1. <https://thinking-tester-contact-list.herokuapp.com/users> (add user)
2. <https://thinking-tester-contact-list.herokuapp.com/users/login> (login)
3. <https://thinking-tester-contact-list.herokuapp.com/users/me> (view user profile)
4. <https://thinking-tester-contact-list.herokuapp.com/contacts> (add contact)
5. [https://thinking-tester-contact-list.herokuapp.com/contacts/${contactid}](https://thinking-tester-contact-list.herokuapp.com/contacts/$%7bcontactid%7d) (view detail contact)
6. [https://thinking-tester-contact-list.herokuapp.com/contacts/${contactid}](https://thinking-tester-contact-list.herokuapp.com/contacts/$%7bcontactid%7d) (Update contact)
7. [https://thinking-tester-contact-list.herokuapp.com/contacts/${contactid}](https://thinking-tester-contact-list.herokuapp.com/contacts/$%7bcontactid%7d) (patch data contact)
8. [https://thinking-tester-contact-list.herokuapp.com/contacts/${contactid}](https://thinking-tester-contact-list.herokuapp.com/contacts/$%7bcontactid%7d) (delete contact)
9. [https://thinking-tester-contact-list.herokuapp.com/contacts/${contactid}](https://thinking-tester-contact-list.herokuapp.com/contacts/$%7bcontactid%7d) (delete user)

## Objective

## Tujuan dari pengujian performa ini adalah untuk mengevaluasi kondisi API pada contact list App saat menerima beban pengguna yang meningkat, mulai dari 25 hingga 75 Pengguna Virtual (VU) dalam durasi tetap 20 detik per skenario. Tujuan utamanya adalah untuk menilai skalabilitas, konsistensi respons, dan batas kapasitasnya.

## Test Scenario

|  |  |  |  |
| --- | --- | --- | --- |
| **Scenario** | **Virtual User** | **Rump-up Periode (s)** | **Duration (ms)** |
| 1 | 25 | 20 | 2000 |
| 2 | 50 | 20 | 2000 |
| 3 | 75 | 20 | 2000 |

## Key Matric Captured

* **Average Response Time (ms)**
  + Rata-rata waktu yang dibutuhkan server untuk merespons setiap permintaan.
  + Semakin **rendah** nilainya, semakin **baik**.
  + Contoh: **200 ms** berarti server biasanya merespons dalam waktu **0,2 detik**.
* **90th Percentile Response Time (ms)**
* 90% dari total permintaan selesai **pada atau di bawah waktu ini**, hanya 10% yang lebih lambat.
* Memberikan gambaran **lebih realistis tentang pengalaman pengguna** dibanding rata-rata saja.
* Contoh: Jika P90 = 1180 ms, artinya 90% pengguna mendapat respons lebih cepat dari 1180 ms.
* **Max Response Time (ms)**
* Waktu respon **terlama** yang tercatat selama pengujian.
* Menunjukkan skenario **terburuk**, bisa jadi karena bottleneck atau lonjakan beban.
* Contoh: **2500 ms** berarti ada satu permintaan yang butuh **1.5 detik** untuk dijawab.
* **Throughput (requests/second)**
  + Jumlah permintaan yang dapat ditangani server setiap detik.
  + Mencerminkan **kapasitas sistem di bawah beban**.
  + Contoh: **1000 req/s** berarti sistem memproses **1000 permintaan per detik**.
* **Error Rate (%)**
  + Persentase permintaan yang **gagal** (misalnya timeout, HTTP 500).
  + Harus **mendekati 0%** untuk menunjukkan kestabilan sistem.
  + Contoh: **2% dari 10.000 permintaan = 200 permintaan gagal**.

## Test Result Summary

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **VU** | **Sampler** | **Avg Resp Time (ms)** | **P90 Resp Time (ms)** | **Max Resp Time (ms)** | **Throughput (req/s)** | **Error Rate (%)** | **Downtime**  **Durations (min)** |
| 25 | 225 | 433 | 1180 | 2037 | 9.70 | 0.0 |  |
| 50 | 450 | 432 | 1169 | 2156 | 18.9 | 0.0 |  |
| 75 | 650 | 441 | 1197 | 3697 | 26.47 | 0.15 |  |
| 100 | 900 | 436 | 1994 | 1556 | 37.27 | 1.11 |  |

## Detailed Test Result

### Scenario 1 25 - VU

#### Request Summary A screenshot of a computer error AI-generated content may be incorrect.

#### Response Time Percentiles A graph with lines and numbers AI-generated content may be incorrect.

#### Response Time Overview

#### Response Time Percentiles Over Time (successful response)

#### Throughput Hits Per Second A screenshot of a graph AI-generated content may be incorrect.

#### Transaction Per Second A screenshot of a computer AI-generated content may be incorrect.

#### Response Time vs request

### Scenario 2 – 50 VU

#### Request Summary A screenshot of a computer AI-generated content may be incorrect. A screenshot of a computer AI-generated content may be incorrect.

#### Response Time Percentiles A graph with lines and numbers AI-generated content may be incorrect.

#### Response Time Overview A screenshot of a computer AI-generated content may be incorrect.

#### Response Time Percentiles Over Time (successful response)

#### Throughput Hits Per Second A graph with a line AI-generated content may be incorrect.

#### Transaction Per Second A graph with colorful lines AI-generated content may be incorrect.

#### Response Time vs Request A graph with green dots AI-generated content may be incorrect.

### Scenario 3 – 75 VU

#### Request Summary A screenshot of a computer AI-generated content may be incorrect.

#### Response Time Percentiles A graph with lines and numbers AI-generated content may be incorrect.

#### Response Time Overview A screenshot of a computer AI-generated content may be incorrect.

#### Response Time Percentiles Over Time (successful response)

#### Throughput Hits Per Second

#### Transaction Per Second

#### Response Time vs Request A graph with green and red dots AI-generated content may be incorrect.

### Scenario 4 – 100 VU

#### Request Summary

#### A screenshot of a computer AI-generated content may be incorrect.

#### Response Time Percentiles

#### Response Time Overview A screenshot of a computer AI-generated content may be incorrect.

#### Response Time Percentiles Over Time (successful response) A screenshot of a graph AI-generated content may be incorrect.

#### Throughput Hits Per Second A screenshot of a graph AI-generated content may be incorrect.

#### Transaction Per Second A screenshot of a graph AI-generated content may be incorrect.

#### Response Time vs Request A graph with green and red dots AI-generated content may be incorrect.

## Observation

* **API mampu menangani hingga 100 Virtual Users (VU) dengan 900 Sampler** dengan **waktu respon yang stabil dan tanpa error.**
* **Performa mulai menurun pada 75–00 VU,** ditandai dengan **peningkatan latensi (waktu respon lebih lambat).**
* **Di atas 500 VU, tingkat error meningkat,** yang mengindikasikan adanya **pembatasan (rate limit)** dari API publik atau **bottleneck di sisi backend.**

## Recommendations

* Untuk **demo publik** atau **otomatisasi pengujian**, jaga volume permintaan **di bawah 75 Virtual Users (VU)** / 650 sampler
* Gunakan **mock server atau stub lokal** jika ingin melakukan uji beban (load testing) dalam skala besar.
* Laporkan temuan ke penyedia API jika terjadi **perlambatan yang konsisten dan dapat direproduksi**.

## Conclution

Contact List API tergolong **andal hingga 100 Virtual Users (VU)** dengan waktu respons yang konsisten.  
Namun, ketika melebihi angka tersebut, terjadi **penurunan performa yang signifikan dan peningkatan error**, kemungkinan disebabkan oleh **keterbatasan sumber daya publik**.