Performance

Test Plan

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1. Introduction

This document describes the performance testing approach for the **POST /posts** and **GET /posts** covering baseline, stress, spike, endurance, and edge-load scenarios.
The goal is to evaluate system stability, scalability, response times, and error behavior under different types of load.

2. Scope

2.1 Scope In

- Load Test for endpoints
- Stress Ramp-up to Failure
- Spike Test (50 → 500 users within 5 seconds)
- Endurance Test (50 threads for 30 minutes)
- Edge Load Test (1000 threads – platform capacity test)
- Analysis of JMeter results
- Two workflows will be tested:
    - **Workflow 1:** POST /posts
    - **Workflow 2:** GET /posts

2.2 Scope Out

- UI testing
- Database-level performance profiling
- Security testing
- Real production load simulation
- Network latency simulation

3. Test Objectives

- Measure **Min / Avg / Max Response Time**
- Ensure **success rate ≥ 95%**
- Identify the **baseline performance** under normal load
- Determine **degradation point** under heavy load
- Ensure no **memory or performance drift** during endurance testing

4. Acceptance Criteria

- **Status Code:** 201
- **Allowed deviation: 5%**
- **Baseline thresholds (Expected):**
    - Min: ≤ 150ms
    - Avg: ≤ 500ms (first 50 threads)
    - Avg: ≤ 2s (up to 500 threads)
    - Max: ≤ 5s
    - Errors: ≤ 5%

5. Strategy / Approach

5.1 Tools

- **JMeter** for load generation
- **Ultimate Thread Group** for Stress & Spike
- **Standard Thread Group** for Baseline & Endurance
- **Simple Data Writer** + CSV for analysis
- **Excel** for filtering & computing Avg/Max/Error

5.2 Approach per Test Type

Baseline Test

- Thread: 50
- Ramp-up: 10s
- Loop: 1

  Purpose: establish baseline under normal load.

Stress Ramp-Up to Failure

- Ultimate Thread Group
- 100 → 200 → 300 → 400 → 500 threads
- Incremental delays

  Expected:

  System should handle increasing load *until degradation begins*.

  Metrics observed: Avg, Max, Error%, Throughput.

Spike Test

- Baseline 50 threads
- Spike to 500 within 5 seconds

  Expected:

  Service survives the spike, no crash, error % ≤ 5% after recovery.

Endurance Test (30 minutes)

- 50 threads
- Ramp-up 10s
- Loop = Forever
- Duration = 30 minutes
  Expected:
- No Avg drift > 20%
- Error < 1%

Edge Load Test (1000 threads)

- 1000 threads
- Ramp-up: 120s
  Expected:
  Failures is expected.
- *Edge Test designed to break or stress the system*

6. Test Environment

Component	Description
Tool	Apache JMeter
Protocol	HTTPS
API Under Test	https://jsonplaceholder.typicode.com/ Post /posts Get /posts
Network	executed using a mobile hotspot
OS	Windows 11

7. Roles & Responsibilities

Tester

- JMeter test plan creation
- Running performance scenarios
- Collecting CSV + generating Excel analysis
- Reporting Min/Avg/Max/Error%
- Identifying degradation point
- Preparing final Performance Test Report

Project Lead / QA Lead

- Reviewing test plan
- Approving load levels
- Reviewing and validating results
- Final acceptance decision

8. Deliverables

- **Performance Test Plan**
- **JMeter .jmx test scripts**
- **Generated CSV result files for spike and stress tests**
  Contains : data analysis for break points
- **Excel analysis sheets contains :**
  Test cases-Bug report-RTM-Summary report

9. Risks & Assumptions

- The testing environment may not reflect production capacity.
- Network fluctuation may affect response times.
- jsonplaceholder API is public mock API → may behave inconsistently.