**SRS Document – Performance Testing for JSONPlaceholder API**

**Version 1.0**

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**1. Purpose of the document**

The purpose of this document is to define the requirements and functionalities of the JSONPlaceholder API for performance testing. It provides a clear understanding of the endpoints used, expected behavior, and performance parameters. This document will serve as a reference for the QA team, developers, and stakeholders to plan and execute load, stress, spike, and endurance testing.

## **2. Overall Description**

### **2.1 System Overview**

JSONPlaceholder is a free online REST API for testing and prototyping. It provides dummy data for posts, comments, todos, users, etc.

### **2.2 System Features**

* **GET /posts** – retrieve all posts
* **POST /posts** – create a new post

### **2.3 User Characteristics**

* Users are API clients or automated scripts.
* Users do not require authentication for this demo API.

### **2.4 Constraints**

* All responses must comply with JSON format.
* Endpoints should return proper HTTP status codes (200, 201, 404).
* Performance tests must respect SLA response times.

## **4. Functional Requirements**

* **FR\_01:** System shall allow clients to retrieve all posts using GET /posts under normal load.
* **FR\_02:** System shall allow clients to create a new post using POST /posts under normal load.
* **FR\_03:** System shall handle stress test for GET /posts with 1000 users.
* **FR\_04:** System shall handle spike test for GET /posts with 300 users in 1 second.
* **FR\_05:** System shall handle spike test for POST /posts with 300 users in 1 second.
* **FR\_06:** System shall return 404 for GET /posts/{id} with invalid ID.
* **FR\_07:** System shall allow endurance GET /posts under 50 users for 2 hours.
* **FR\_08:** System shall allow endurance POST /posts under 50 users for 2 hours.
* **FR\_09:** System shall handle peak load GET /posts with 500 users over 2 minutes.
* **FR\_10:** System shall handle peak load POST /posts with 500 users over 2 minutes.

## **5. Non-Functional Requirements**

* **(NFR\_01) Performance:** Response time < SLA (typically <2s).
* **(NFR\_02) Reliability:** API must remain stable under load, stress, and spike tests.
* **(NFR\_03) Scalability:** System must support up to 1000 concurrent users during stress tests.

## **6. Test Environment**

* **Tool:** Apache JMeter
* **System:** Local PC / QA Test Machine
* **Endpoint Base URL:** <https://jsonplaceholder.typicode.com>
* **Thread Groups:** Separate for GET and POST requests
* **Listeners:** View Results Tree, Summary Report, Response Time Graph, Aggregate Report
* **Timers:** Constant Timer for simulating think time between requests
* **Assertions:** HTTP Response Assertion.