**API Performance Report**

**1. Summary of Results:**

* **Test Duration:** 15 minutes
* **Concurrent Users:** 100
* **APIs Tested:** Create User, List Users, Update User
* **Key Metrics:**
  + **Average Response Time:** 200ms for Create User, 150ms for List Users, 180ms for Update User
  + **Peak Response Time:** 800ms during ramp-up phase
  + **Throughput:** 1500 requests/min
  + **Error Rate:** 0.5% (intermittent 500 errors during peak load)

**2. Findings:**

* **Response Time Variations:** Notable spikes during the first 2 minutes, indicating potential issues with server resource scaling.
* **Bottlenecks:**
  + Create User API shows increased latency under high concurrency due to database write operations.
  + Occasional 500 errors linked to resource exhaustion during simultaneous Update requests.
* **Server Resource Utilization:** High CPU usage (85%) and memory consumption during peak load.

**3. Recommendations:**

* **Optimize Database Operations:** Implement indexing and query optimization for Create User API to reduce write latency.
* **Load Balancing:** Distribute traffic more evenly using load balancers to handle high concurrent requests.
* **Resource Scaling:** Configure auto-scaling policies to handle sudden spikes in traffic, especially during ramp-up.
* **Error Handling:** Improve error handling mechanisms to gracefully manage resource exhaustion, reducing 500 error occurrences.
* **Monitoring:** Set up real-time monitoring tools to proactively detect and mitigate performance issues.