

Performance Test Evaluation

Team Members Involved:

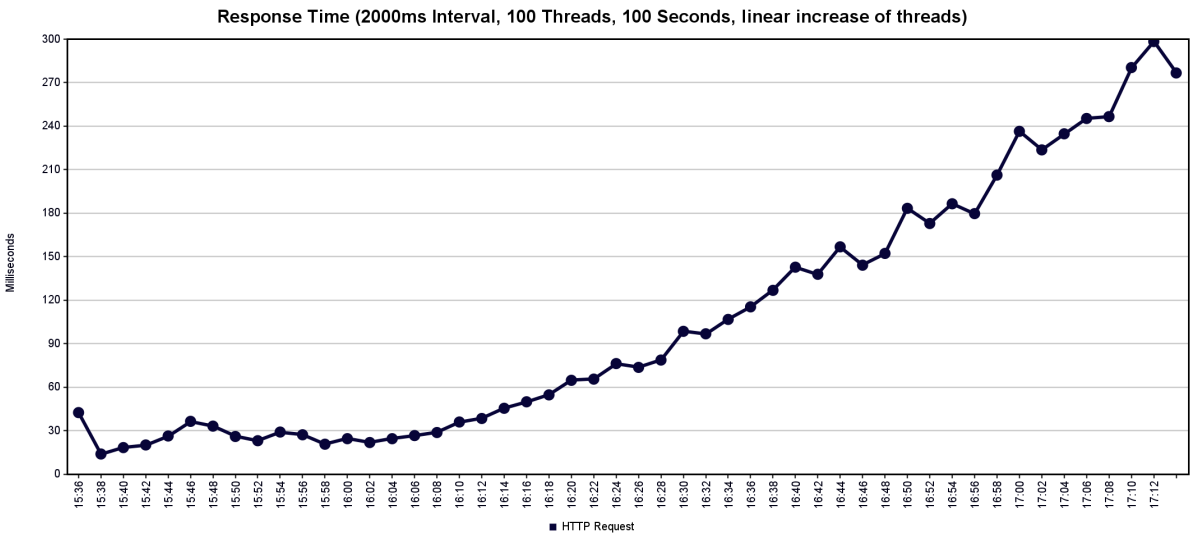
- Ante Brähler
- Christian Neufeld

HTTP-Server tests repeated (Prak2)

Test Configuration

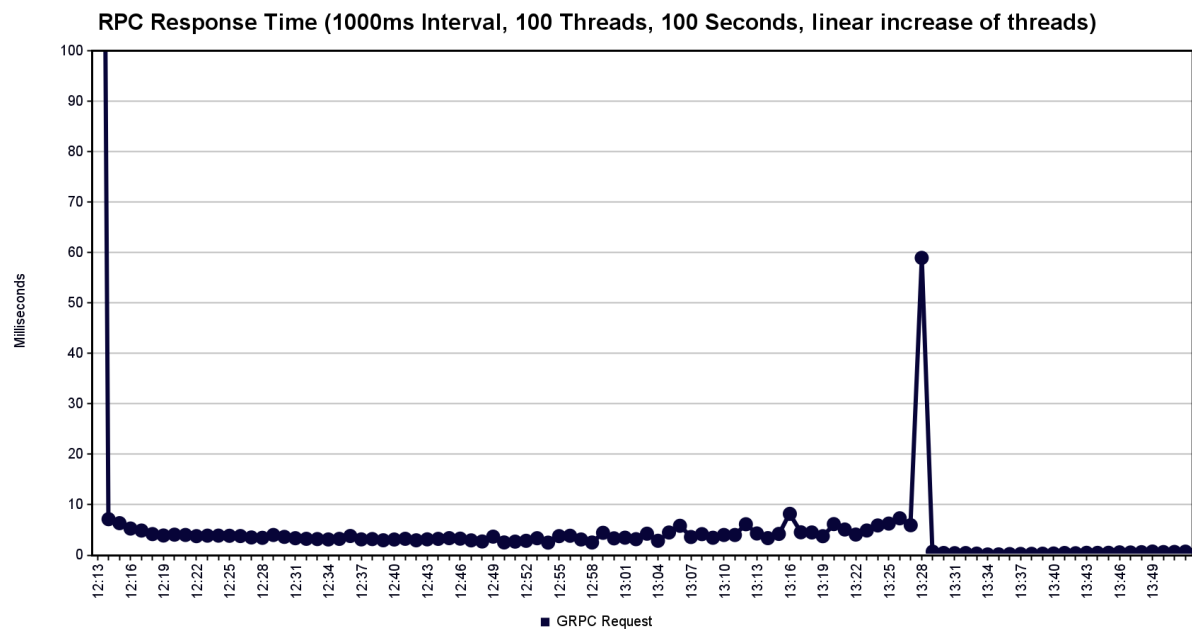
- **Tool:** Apache JMeter
- **Thread Group:** 100 threads (users)
- **Ramp-up Period:** 100 seconds (linear increase of 1 user per second)
- **Test Duration:** 100 seconds
- **Test Type:** Continuous POST requests to the API endpoint measuring Round Trip Time (RTT)

Metric	HTTP	HTTP with RPC	HTTP with MQTT
Average	74ms	85ms	76ms
Median	36ms	52ms	56ms
90% Line	201ms	210ms	205ms
Max	614ms	937ms	1106ms
Throughput	677 req/s	588 req/s	651 req/s



RPC tests repeated (Prak3)

Metric	RPC	RPC with MQTT
Average	3ms	3ms
Median	3ms	3ms
90% Line	5ms	5ms
Max	363ms	274ms
Throughput	1017 req/s	1012 req/s



MQTT performance tests

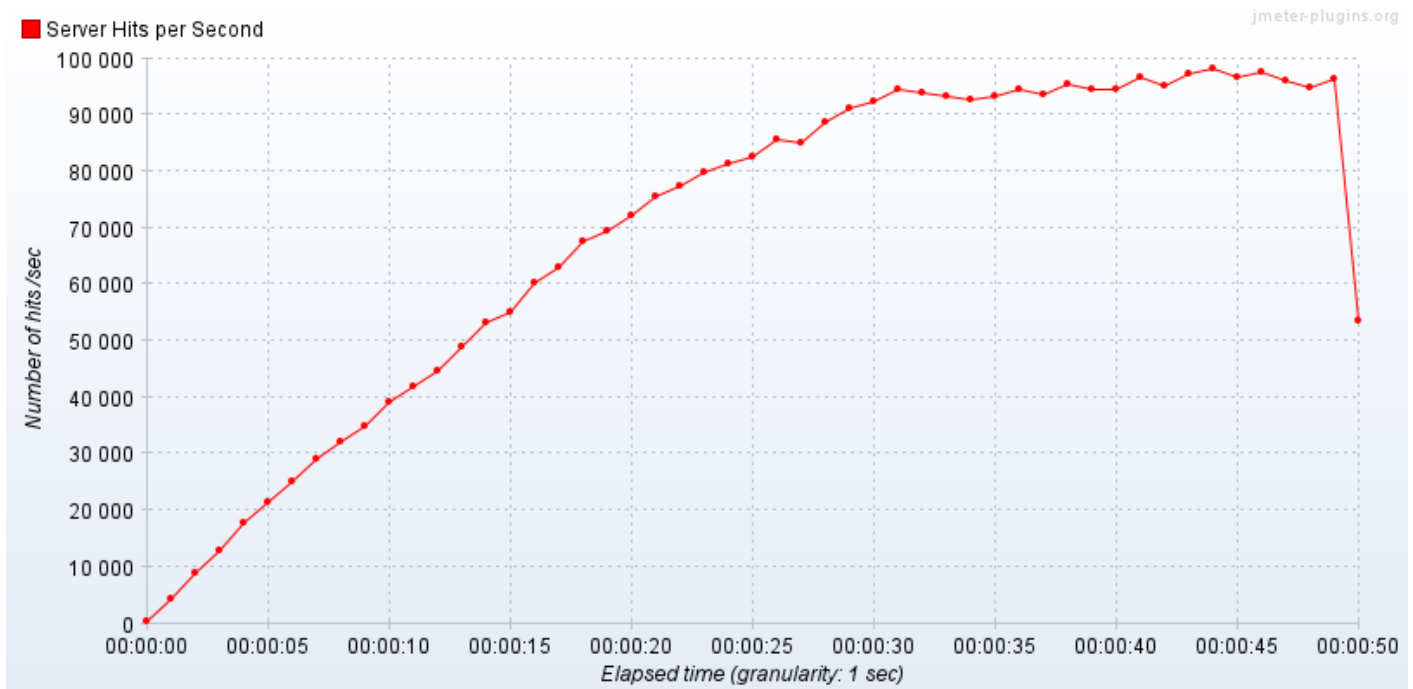
Test Configuration

- **Tool:** Apache JMeter
- **Thread Group:** 450 threads (users)
- **Ramp-up Period:** 50 seconds
- **Test Duration:** 50 seconds
- **MQTT QoS:** 0
- **Test Type:** Continuous growing number of MQTT calls measuring throughput in requests/second

Results Analysis

- **Total Samples:** 3531270
- **Throughput:** ~70583 requests/second

- **Error Rate:** 0%



The graph initially shows a linear increase in throughput (requests/second) with a constant rise in the number of requests. Around 90k req/sec, the increase slows down and forms a plateau at approximately 100k req/sec. This indicates that the capacity limit of the local HiveMQ setup has been reached.

Further increasing the number of threads led to a rising error rate.

Important Note

When replicating this test with JMeter, make sure to increase your `ephemeral port range` or reduce `TcpTimedWaitDelay`. This is crucial to prevent port exhaustion issues.