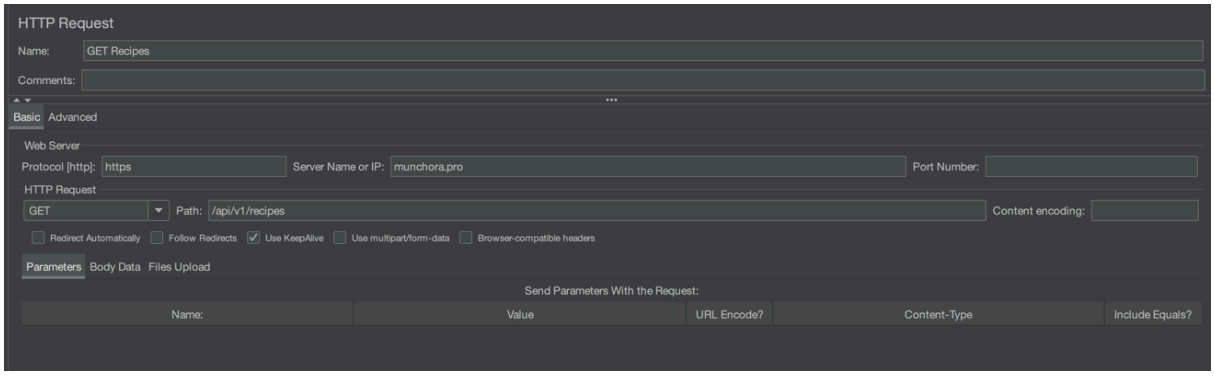
Stress Performance Testing - Apache JMeter

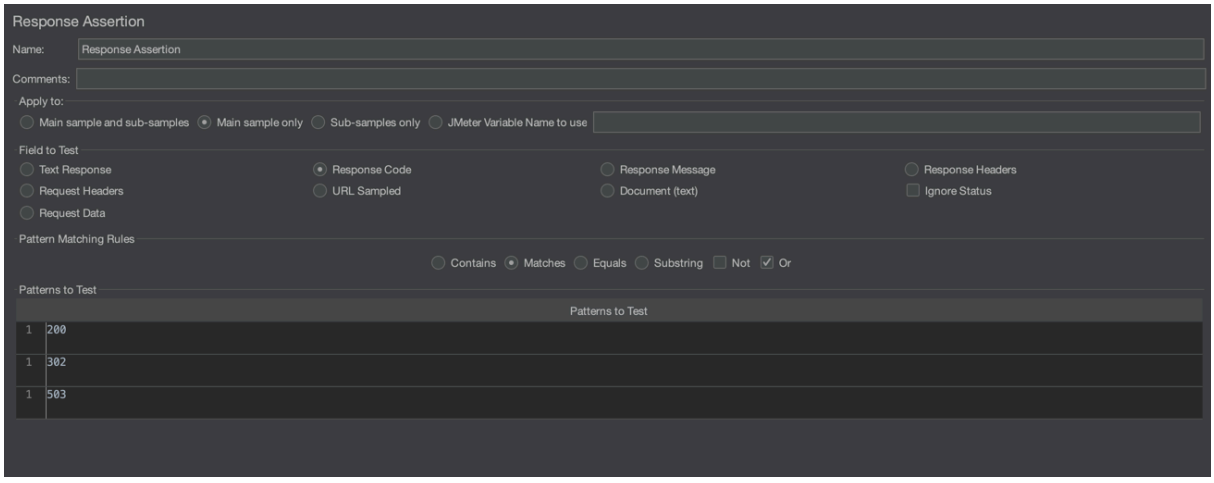
Using Apache JMeter for the following stress performance tests.

Configuration

All stress test are configured to use this `GET` request for the deployed Munchora server.



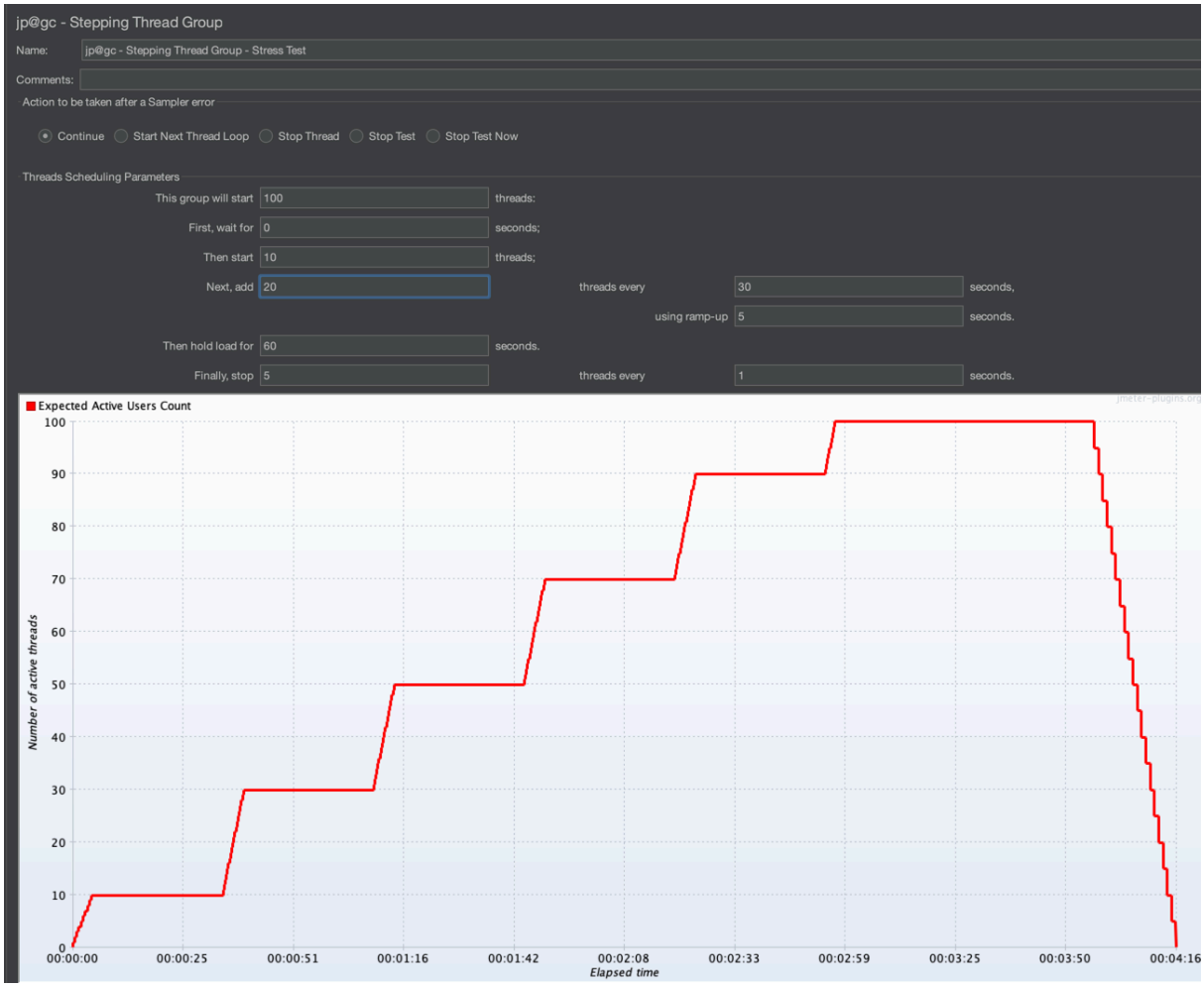
Same assertions for the three different tests.



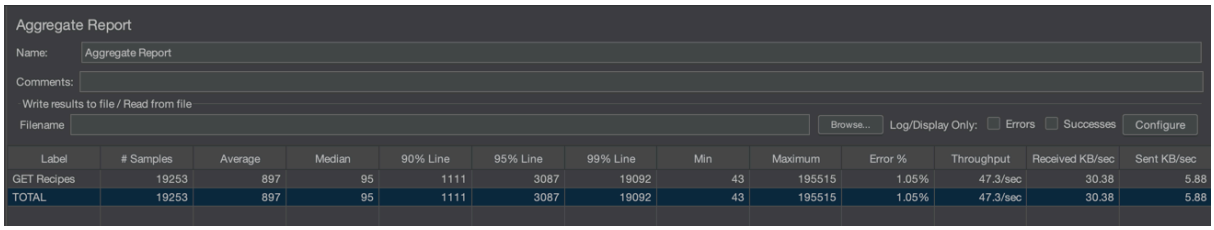
- `200` → status OK
- `302` → Ruby on Rails rate limit has been exceeded - client gets redirected to https://disney.com
- `503` → Rate limit configured at Reverse Proxy Nginx.

Stress Testing

Push system beyond normal limits to find breaking points - makes use of extension `pg@gc – Stepping Thread Group`.



Aggregated results:



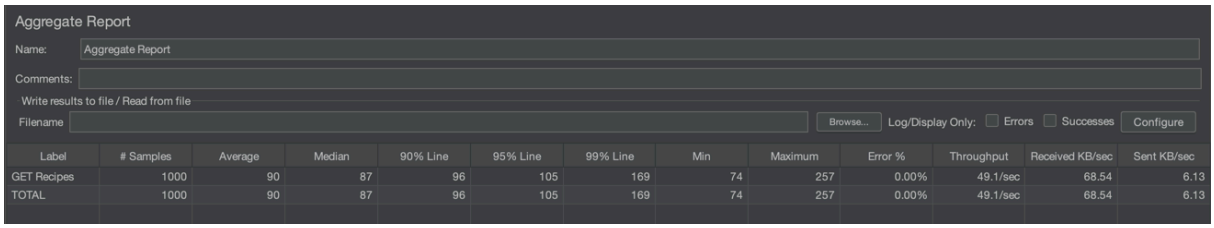
Label	# Samples	Average	Median	90% Line	95% Line	99% Line	Min	Maximum	Error %	Throughput	Received KB/sec	Sent KB/sec
GET Recipes	19253	897	95	1111	3087	19092	43	195515	1.05%	47.3/sec	30.38	5.88
TOTAL	19253	897	95	1111	3087	19092	43	195515	1.05%	47.3/sec	30.38	5.88

Load testing

Verify system performance under expected normal-to-peak load (the implementation is expecting middle input)

Thread group setting	Value	Rationale
Number of Threads	200	Expected peak concurrent users
Ramp-up Period	20 seconds	Smooth, gradual increase
Loop Count	5	Enough to gather statistics

Aggregated results:



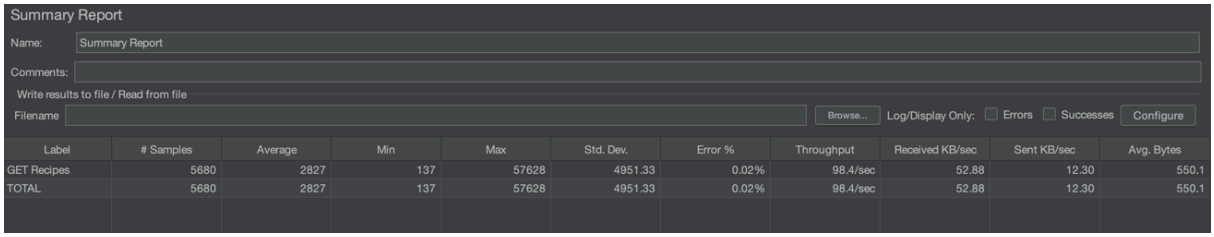
Label	# Samples	Average	Median	90% Line	95% Line	99% Line	Min	Maximum	Error %	Throughput	Received KB/sec	Sent KB/sec
GET Recipes	1000	90	87	96	105	169	74	257	0.00%	49.1/sec	68.54	6.13
TOTAL	1000	90	87	96	105	169	74	257	0.00%	49.1/sec	68.54	6.13

Spike testing

Verify system performance under a suddenly huge amount of traffic towards server.

Thread group setting	Value	Rationale
Number of Threads	1000 (A huge number)	Simulates the peak of the surge
Ramp-up Period	0 seconds	Very short to simulate a sudden spike
Loop Count	10	Load hits once and immediately stops

Aggregated results:



Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received KB/sec	Sent KB/sec	Avg. Bytes
GET Recipes	5680	2827	137	57628	4951.33	0.02%	98.4/sec	52.88	12.30	550.1
TOTAL	5680	2827	137	57628	4951.33	0.02%	98.4/sec	52.88	12.30	550.1

Test system response to sudden, massive traffic increases.

```
# Ensure to be positioned at ./stress-performance-testing/
# run stress tests
jmeter -n -t stepping_thread_group_stress_test.jmx -l results/load_results.jtl
-e -o reports/load_test

# run load tests
jmeter -n -t load_test.jmx -l results/load_results.jtl -e -o reports/load_test

# run spike tests
jmeter -n -t spike_test.jmx -l results/load_results.jtl -e -o
reports/load_test
```