

TEST REPORT

Set-up

K6 is a modern, open-source performance testing tool designed for developers and QA teams to test the **load, stress, and reliability** of APIs and services. It uses **JavaScript** for scripting and supports simulating thousands of virtual users (VUs) in parallel, making it ideal for high-performance testing scenarios.

K6 is used to test the performance of an API that handles invoice requests.

Specifically, aim to:

- **Determine the optimum number of parallel apps** that provide the best **average response time**.
- Simulate **high traffic conditions** with a controlled arrival rate of requests.

1. Test Objectives

The objective of this test is to determine the **optimum number of application instances** that deliver the **best average response time**, ensuring performance stability under increasing load.

2. General Test Conditions

The following are the test environment and configuration conditions:

- **Server Configuration:**
 - 8 GB RAM
 - 1 vCPU
- **Nginx Configuration:**
 - Worker connections: 5000

- **Performance Expectation:**
 - Average response time: ≤ 100 ms
- **Variable Parameter:**
 - Number of application instances tested: **1 to 30 apps**

3. Tests Performed

3.1 Load Test

Test Duration: 2 minutes

Tool Used: K6

Configuration used:

The test was executed using a constant request rate scenario in K6 with the following parameters:

- **Executor:** constant-arrival-rate
- **Rate:** 500 iterations per minute
- **Time Unit:** 1 minute
- **Duration:** 2 minutes
- **Pre-allocated VUs (Virtual Users):** 1000
- **Graceful Stop:** 300 seconds

3.2 Stress Test

Variables:

- Requests per minute
- NIC processing time(configured in mock server)
- Number of applications

Test Duration: 20 minutes

Tool Used: K6

Configuration Used:

The stress test was conducted using the executor constant-arrival-rate in K6 with the following configuration to push the system to its limits:

- **Executor** : constant-arrival-rate
- **Rate:** 3000 iterations per minute and 1000 iterations per minute
- **Time Unit:** 1 minute
- **Duration:** 20 minutes
- **Pre-allocated VUs (Virtual Users):** 2000
- **Graceful Stop:** 300 seconds

Load Test performed for 5 apps

Duration- 2min

Request rate:-500req/min

Latency - 50s

```
45 einvAuth.js > options > scenarios > constant_request_rate > rate
3
4   export const options = {
5     scenarios: {
6       constant_request_rate: {
7         executor: 'constant-arrival-rate',
8         rate:500, // 500 iterations
9         timeUnit: '1m', // per minute
10        duration: '2m',
11        preAllocatedVUs: 2000, // Pre-allocate enough VUs
12        // maxVUs: 50, // Allow some headroom for spikes
13        gracefulStop: '300s',
14      },
15    },
16  },
17
18  PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
19
20  ✓ auth status is 200
21
22  HTTP
23  http_req_duration.....: avg=50.07s min=50.04s med=50.05s max=50.42s p(90)=50.12s p(95)=50.16s
24    { expected_response:true }.....: avg=50.07s min=50.04s med=50.05s max=50.42s p(90)=50.12s p(95)=50.16s
25  http_req_failed.....: 0.00% 0 out of 1001
26  http_reqs.....: 1001 5.881565/s
27
28  EXECUTION
29  iteration_duration.....: avg=50.12s min=50.07s med=50.09s max=50.47s p(90)=50.19s p(95)=50.23s
30  iterations.....: 1001 5.881565/s
31  vus.....: 3 min=3 max=420
32  vus_max.....: 2000 min=2000 max=2000
33
34  NETWORK
35  data_received.....: 501 kB 2.9 kB/s
36  data_sent.....: 388 kB 2.3 kB/s
37
38  running (2m50.2s), 0000/2000 VUs, 1001 complete and 0 interrupted iterations
39  constant_request_rate ✓ [=====] 0000/2000 VUs 2m0s 8.33 iters/s
40  ERROR[0170] thresholds on metrics 'http_req_duration' have been crossed
41  kashishseth@MI-SIS-FZYL493:~/Downloads$
```

Duration- 2min

Request rate:-1000req/min

Latency - 50s

```
JS einvAuth.js > [options] > [scenarios] > [constant_request_rate] > [rate]
3
4 export const options = {
5   scenarios: {
6     constant_request_rate: {
7       executor: 'constant-arrival-rate',
8       rate:1000, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '2m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
14    },
15  },
16 };
17
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

TOTAL RESULTS

```
checks_total.....: 2001 11.765696/s
checks_succeeded.....: 100.00% 2001 out of 2001
checks_failed.....: 0.00% 0 out of 2001

✓ auth status is 200
```

HTTP

```
http_req_duration.....: avg=50.07s min=50.04s med=50.06s max=50.48s p(90)=50.09s p(95)=50.11s
{ expected_response:true }.....: avg=50.07s min=50.04s med=50.06s max=50.48s p(90)=50.09s p(95)=50.11s
http_req_failed.....: 0.00% 0 out of 2001
http_reqs.....: 2001 11.765696/s
```

EXECUTION

```
iteration_duration.....: avg=50.12s min=50.06s med=50.1s max=50.53s p(90)=50.15s p(95)=50.18s
iterations.....: 2001 11.765696/s
vus.....: 6 min=6 max=836
vus_max.....: 2000 min=2000 max=2000
```

NETWORK

```
data_received.....: 1.0 MB 5.9 kB/s
data_sent.....: 776 kB 4.6 kB/s
```

Duration- 2min

Request rate:-1500req/min

Latency - 50s

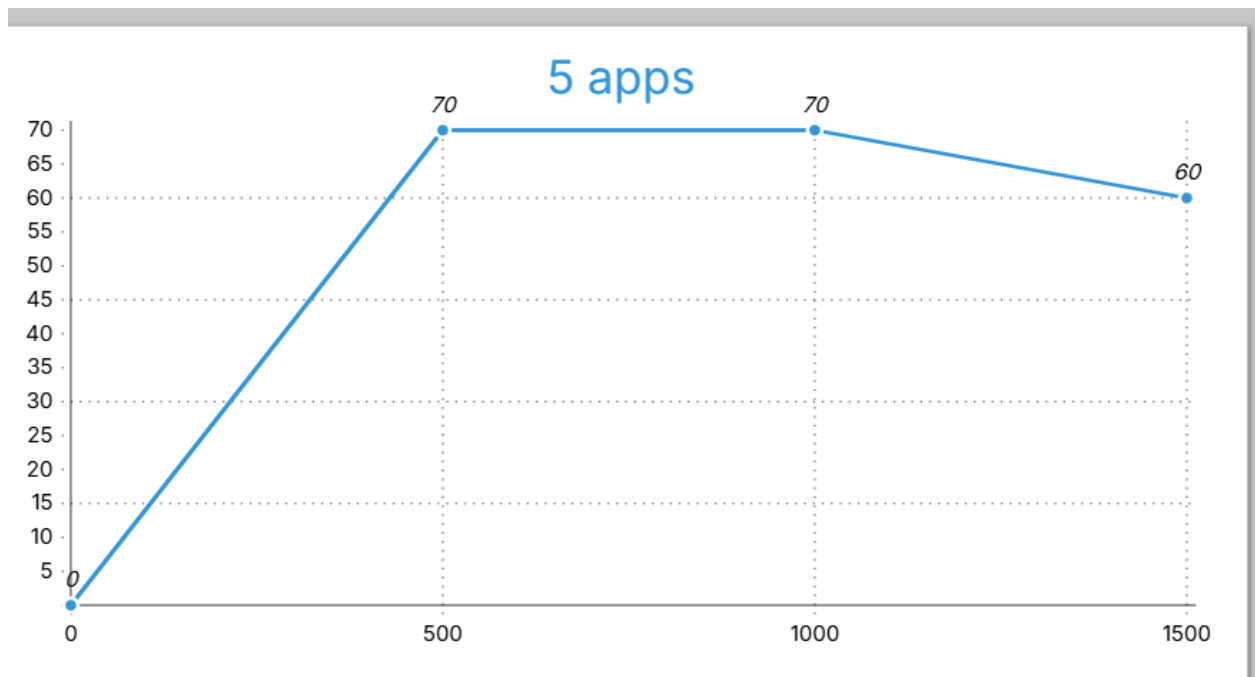
```
js einvAuth.js > [options] > [scenarios] > [constant_request_rate] > [rate]
3
4 export const options = {
5   scenarios: {
6     constant_request_rate: {
7       executor: 'constant-arrival-rate',
8       rate:1500, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '2m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
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```

GRAPH

Axes

X axis: Request rate

Y axis: Response time



Load Test performed for 15 apps

Duration- 2min

Request rate:-500req/min

Latency - 50s

```
js einvAuth.js > [options] > [scenarios] > [constant_request_rate] > [rate]
3
4 export const options = {
5   scenarios: {
6     constant_request_rate: {
7       executor: 'constant-arrival-rate',
8       rate:500, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '2m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
14    },
15  },
16 };
17
18 PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
19
20 ✓ auth status is 200
21
22 HTTP
23 http_req_duration.....: avg=50.08s min=50.04s med=50.06s max=50.41s p(90)=50.13s p(95)=50.16s
24 { expected_response:true }.....: avg=50.08s min=50.04s med=50.06s max=50.41s p(90)=50.13s p(95)=50.16s
25 http_req_failed.....: 0.00% 0 out of 1000
26 http_reqs.....: 1000 5.882756/s
27
28 EXECUTION
29 iteration_duration.....: avg=50.13s min=50.08s med=50.11s max=50.46s p(90)=50.19s p(95)=50.22s
30 iterations.....: 1000 5.882756/s
31 vus.....: 3 min=3 max=419
32 vus_max.....: 2000 min=2000 max=2000
33
34 NETWORK
35 data_received.....: 500 kB 2.9 kB/s
36 data_sent.....: 388 kB 2.3 kB/s
37
38 running (2m50.0s), 0000/2000 VUs, 1000 complete and 0 interrupted iterations
39 constant request rate ✓ [=====] 0000/2000 VUs 2m0s 8.33 iters/s
40 ERROR[0170] thresholds on metrics 'http_req_duration' have been crossed
41 kashishseth@MI-SIS-FZYL493:~/Downloads$
```


Duration- 2min

Request rate:-1000req/min

Latency - 50s

```
# envAuth.js > headers
3
4 export const options = {
5   scenarios: {
6     constant_request_rate: {
7       executor: 'constant-arrival-rate',
8       rate:1000, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '2m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
14    },
15  },
16  thresholds: {
17    http_req_duration: ['p(95)<2000'],
18  },
19 };
20
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
http_req_failed
✓ 'rate=0.01' rate=0.00%

TOTAL RESULTS

checks_total.....: 2001 11.762973/s
checks_succeeded.....: 100.00% 2001 out of 2001
checks_failed.....: 0.00% 0 out of 2001

✓ auth status is 200

HTTP
http_req_duration.....: avg=50.06s min=50.04s med=50.05s max=50.34s p(90)=50.08s p(95)=50.1s
{ expected_response:true }.....: avg=50.06s min=50.04s med=50.05s max=50.34s p(90)=50.08s p(95)=50.1s
http_req_failed.....: 0.00% 0 out of 2001
http_reqs.....: 2001 11.762973/s

EXECUTION
iteration_duration.....: avg=50.1s min=50.07s med=50.09s max=50.42s p(90)=50.13s p(95)=50.17s
iterations.....: 2001 11.762973/s
VUs.....: 8 min=8 max=839
VUs_max.....: 2000 min=2000 max=2000

NETWORK
data_received.....: 1.0 MB 5.9 kB/s
data_sent.....: 776 kB 4.6 kB/s

running (2m50.1s), 0000/2000 VUs, 2001 complete and 0 interrupted iterations
constant_request_rate / [=====] 0000/2000 VUs 2m0s 16.67 iters/s
```

Duration- 2min

Request rate:-1500req/min

Latency - 50s

```
45 einvAuth.js > options > scenarios > constant_request_rate > rate
3
4 export const options = {
5   scenarios: {
6     constant_request_rate: {
7       executor: 'constant-arrival-rate',
8       rate:1500, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '2m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
14    },
15  },
16};
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

✓ auth status is 200

HTTP

| | | | | | | |
|---------------------------------|------------|---------------|------------|------------|--------------|--------------|
| http_req_duration..... | avg=50.17s | min=50.04s | med=50.11s | max=51.51s | p(90)=50.33s | p(95)=50.52s |
| { expected_response:true }..... | avg=50.17s | min=50.04s | med=50.11s | max=51.51s | p(90)=50.33s | p(95)=50.52s |
| http_req_failed..... | 0.00% | 0 out of 3000 | | | | |
| http_reqs..... | 3000 | 17.608502/s | | | | |

EXECUTION

| | | | | | | |
|-------------------------|------------|-------------|------------|------------|--------------|--------------|
| iteration_duration..... | avg=50.23s | min=50.04s | med=50.17s | max=52.32s | p(90)=50.41s | p(95)=50.64s |
| iterations..... | 3000 | 17.608502/s | | | | |
| vus..... | 10 | min=10 | max=1281 | | | |
| vus_max..... | 2000 | min=2000 | max=2000 | | | |

NETWORK

| | | |
|--------------------|--------|----------|
| data_received..... | 1.5 MB | 8.8 kB/s |
| data_sent..... | 1.2 MB | 6.8 kB/s |

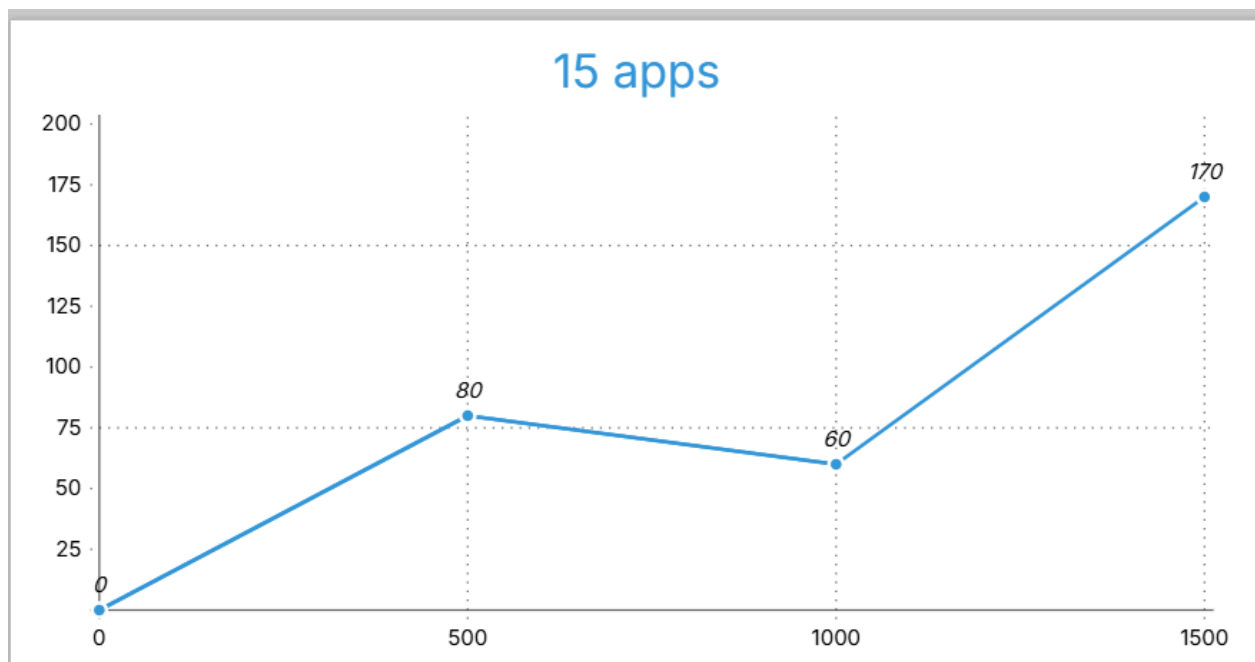
running (2m50.4s), 0000/2000 VUs, 3000 complete and 0 interrupted iterations
constant_request_rate ✓ [=====] 0000/2000 VUs 2m0s 25.00 iters/s
ERROR[0173] thresholds on metrics 'http_req_duration' have been crossed
kashishseth@MI-SIS-FZY493:~/Downloads\$

GRAPH

Axes

X axis: Request rate

Y axis: Response time

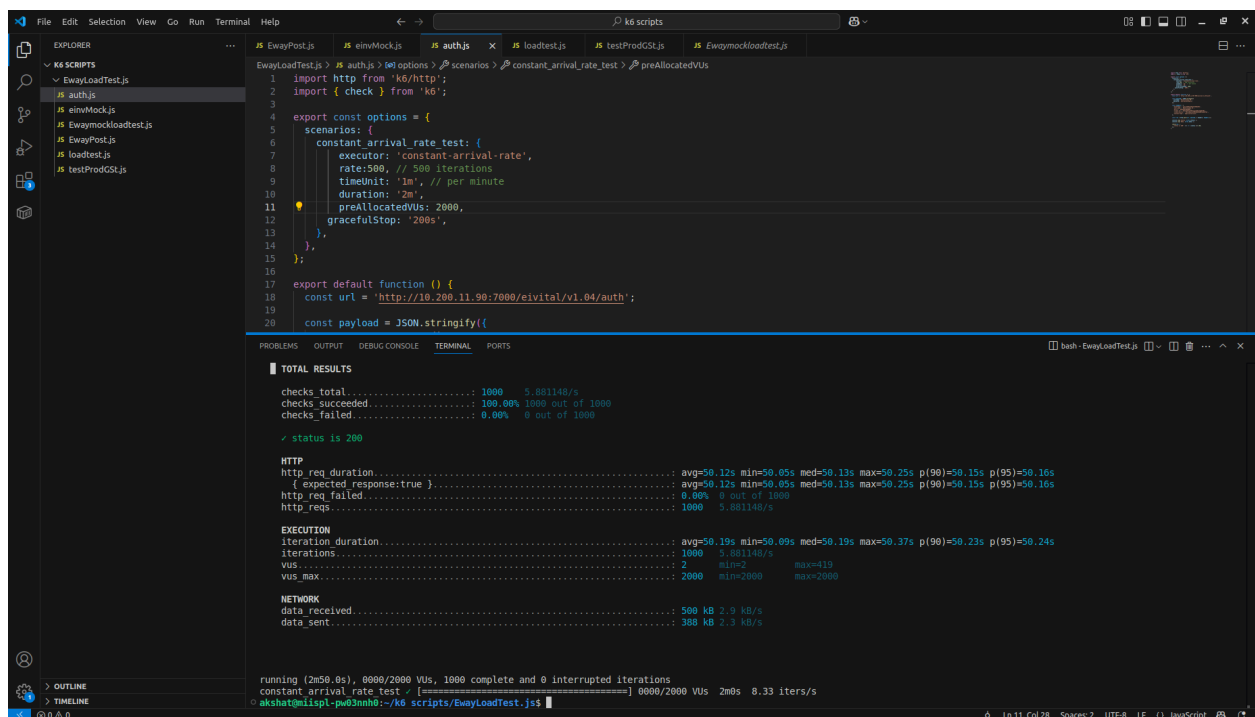


Load Test performed for 25 apps

Duration- 2min

Request rate:-500req/min

Latency - 50s



The screenshot shows a VS Code editor with a file explorer on the left containing several JavaScript files. The main editor displays a file named `EwayLoadTest.js` with the following code:

```
1 import http from 'k6/http';
2 import { check } from 'k6';
3
4 export const options = {
5   scenarios: {
6     constant_arrival_rate_test: {
7       executor: 'constant-arrival-rate',
8       rate: 500, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '2m',
11      preAllocatedVUs: 2000,
12      gracefulStop: '200s',
13    },
14  },
15 };
16
17 export default function () {
18   const url = 'http://10.200.11.90:7000/eivital/v1.04/auth';
19
20   const payload = JSON.stringify({
```

The terminal window at the bottom shows the execution results:

```
bash - EwayLoadTest.js
TOTAL RESULTS
checks total .....: 1000    5.881146/s
checks succeeded .....: 100.00% 1000 out of 1000
checks failed .....: 0.00% 0 out of 1000
✓ status is 200

HTTP
http_req_duration.....: avg=50.12s min=50.05s med=50.13s max=50.25s p(90)=50.15s p(95)=50.16s
{ expected response:true }.....: avg=50.12s min=50.05s med=50.13s max=50.25s p(90)=50.15s p(95)=50.16s
http_req_failed.....: 0.00% 0 out of 1000
http_reqs.....: 1000    5.881146/s

EXECUTION
iteration duration.....: avg=50.19s min=50.09s med=50.19s max=50.37s p(90)=50.23s p(95)=50.24s
iterations.....: 1000    5.881146/s
vus.....: 2    min=2    max=419
vus_max.....: 2000    min=2000    max=2000

NETWORK
data received.....: 500 kB 2.9 kB/s
data sent.....: 388 kB 2.3 kB/s

running (2m50.8s), 0000/2000 VUs, 1000 complete and 0 interrupted iterations
constant_arrival_rate_test / [=====] 0000/2000 VUs  2m0s  8.33 iters/s
akshat@miispl-pw03nmh0:~/k6_scripts/EwayLoadTest.js
```

Duration- 2min

Request rate:-1000req/min

Latency - 50s

```
45 elnAuth.js > options > scenarios > constant_request_rate > rate
3
4 export const options = {
5   scenarios: {
6     constant_request_rate: {
7       executor: 'constant-arrival-rate',
8       rate:1000, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '2m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
14    },
15  },
16 }
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Duration- 2min

Request rate:-1500req/min

Latency - 50s

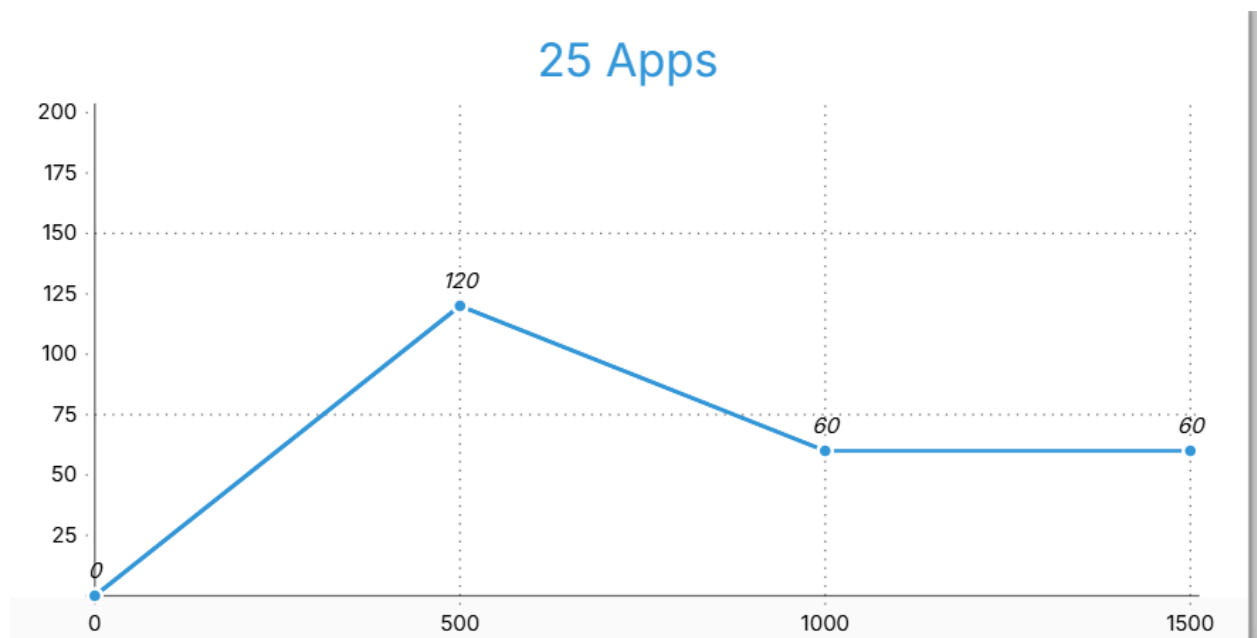
```
15 einvAuth.js > [0] options > scenarios > constant_request_rate > rate
3
4 export const options = {
5   scenarios: {
6     constant_request_rate: {
7       executor: 'constant-arrival-rate',
8       rate:1500, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '2m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
14    },
15  },
16 }
17
18 PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
19
20 ✓ auth status is 200
21
22 HTTP
23 http_req_duration.....: avg=50.06s min=50.03s med=50.05s max=50.41s p(90)=50.09s p(95)=50.11s
24 { expected_response:true }.....: avg=50.06s min=50.03s med=50.05s max=50.41s p(90)=50.09s p(95)=50.11s
25 http_req_failed.....: 0.00% 0 out of 3001
26 http_reqs.....: 3001 17.647468/s
27
28 EXECUTION
29 iteration_duration.....: avg=50.08s min=50.04s med=50.08s max=50.42s p(90)=50.13s p(95)=50.16s
30 iterations.....: 3001 17.647468/s
31 vus.....: 7 min=7 max=1255
32 vus_max.....: 2000 min=2000 max=2000
33
34 NETWORK
35 data_received.....: 1.5 MB 8.8 kB/s
36 data_sent.....: 1.2 MB 6.8 kB/s
37
38 running (2m50.1s), 0000/2000 VUs, 3001 complete and 0 interrupted iterations
39 constant_request_rate ✓ [=====] 0000/2000 VUs 2m0s 25.00 iters/s
40 ERROR[0170] thresholds on metrics 'http_req_duration' have been crossed
41 kashishseth@MI-SIS-FZYL493:~/Downloads$
```

GRAPH

Axes

X axis: Request rate

Y axis: Response time



Stress test performed for 15 apps

Latency - 50sec

- Request rate :- 1000

```
JS einvAuth.js > options > scenarios > constant_request_rate > preAllocatedVUs
2 import { check, sleep } from 'k6';
3
4 export const options = {
5   scenarios: {
6     constant_request_rate: {
7       executor: 'constant-arrival-rate',
8       rate: 1000, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '20m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
14    },
15  },
16  thresholds: {
17    http_req_duration: ['p(95)<2000'],
18    http_req_failed: ['rate<0.01'],
19  },
20 };

```

PROBLEMS OUTPUT DEBUG CONSOLE **TERMINAL** PORTS

TOTAL RESULTS

```

checks_total.....: 20001 16.000032/s
checks_succeeded.....: 100.00% 20001 out of 20001
checks_failed.....: 0.00% 0 out of 20001

✓ auth status is 200

HTTP
http_req_duration.....: avg=50.1s min=50.04s med=50.07s max=51.06s p(90)=50.17s p(95)=50.29s
{ expected_response:true }.....: avg=50.1s min=50.04s med=50.07s max=51.06s p(90)=50.17s p(95)=50.29s
http_req_failed.....: 0.00% 0 out of 20001
http_reqs.....: 20001 16.000032/s

EXECUTION
iteration_duration.....: avg=50.11s min=50.04s med=50.07s max=51.15s p(90)=50.18s p(95)=50.31s
iterations.....: 20001 16.000032/s
vus.....: 4 min=4 max=850
vus_max.....: 2000 min=2000 max=2000

NETWORK
data_received.....: 10 MB 8.0 kB/s
data_sent.....: 7.8 MB 6.2 kB/s

running (20m50.1s), 0000/2000 VUs, 20001 complete and 0 interrupted iterations
constant_request_rate ✓ [=====] 0000/2000 VUs 20m0s 16.67 iters/s
cpu(135%) thresholds on metrics http_req_duration have been crossed

```


- Request rate :- 1500

```
JS einvAuthjs > options > scenarios
2 import { check, sleep } from 'k6';
3
4 export const options = {
5   scenarios: {
6     constant_request_rate: {
7       executor: 'constant-arrival-rate',
8       rate:1500, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '20m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
14    },
15  },
16  thresholds: {
17    http_req_duration: {
18      p(95)<2000 p(95)=50.17s
19    },
20    http_req_failed: {
21      rate<0.01 rate=0.00%
22    }
23  }
24 }

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS bash

http_req duration
x 'p(95)<2000' p(95)=50.17s

http_req failed
✓ 'rate<0.01' rate=0.00%

TOTAL RESULTS

checks_total.....: 30001 23.996814/s
checks_succeeded.....: 100.00% 30001 out of 30001
checks_failed.....: 0.00% 0 out of 30001

✓ auth status is 200

HTTP
http_req duration.....: avg=50.08s min=50.03s med=50.06s max=50.66s p(90)=50.13s p(95)=50.17s
{ expected_response:true }.....: avg=50.08s min=50.03s med=50.06s max=50.66s p(90)=50.13s p(95)=50.17s
http_req_failed.....: 0.00% 0 out of 30001
http_reqs.....: 30001 23.996814/s

EXECUTION
iteration_duration.....: avg=50.08s min=50.03s med=50.07s max=50.66s p(90)=50.13s p(95)=50.17s
iterations.....: 30001 23.996814/s
vus.....: 6 min=6 max=1260
vus_max.....: 2000 min=2000 max=2000

NETWORK
data_received.....: 15 MB 12 kB/s
data_sent.....: 12 MB 9.3 kB/s

summary (30=50.08s) - 0000/2000 VUs - 30001 complete and 0 interrupted iterations
```

- Request rate :- 2500

```
JS einvAuth.js > options > scenarios > constant_request_rate
2 import { check, sleep } from 'k6';
3
4 export const options = {
5   scenarios: {
6     constant_request_rate: {
7       executor: 'constant-arrival-rate',
8       rate: 2500, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '20m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
14    },
15  },
16};
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

x 'p(95)<2000' p(95)=50.3s

http_req failed

✓ 'rate<0.01' rate=0.00%

TOTAL RESULTS

checks_total.....: 47917 38.328494/s

checks_succeeded.....: 100.00% 47917 out of 47917

checks_failed.....: 0.00% 0 out of 47917

✓ auth status is 200

HTTP

http_req_duration.....: avg=49.91s min=41.84ms med=50.08s max=51.22s p(90)=50.23s p(95)=50.3s

{ expected_response:true }.....: avg=49.91s min=41.84ms med=50.08s max=51.22s p(90)=50.23s p(95)=50.3s

http_req_failed.....: 0.00% 0 out of 47917

http_reqs.....: 47917 38.328494/s

EXECUTION

dropped_iterations.....: 2084 1.666978/s

iteration_duration.....: avg=49.91s min=42.11ms med=50.08s max=51.22s p(90)=50.23s p(95)=50.31s

iterations.....: 47917 38.328494/s

vus.....: 11 min=11 max=2000

vus_max.....: 2000 min=2000 max=2000

NETWORK

data_received.....: 24 MB 19 kB/s

data_sent.....: 19 MB 15 kB/s

running (20m50.2s), 0000/2000 VUs, 47917 complete and 0 interrupted iterations

constant request rate ✓ [=====] 0000/2000 VUs 20m0s 41.67 iters/s

100012501 thresholds no metrics http_req_duration have been crossed

- Request rate :- 3000

```
JS einvAuth.js > options > scenarios > constant_request_rate
3
4 export const options = {
5   scenarios: {
6     constant_request_rate: {
7       executor: 'constant-arrival-rate',
8       rate:3000, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '20m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
14    },
15  },
16  thresholds: {
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18  }
19 }
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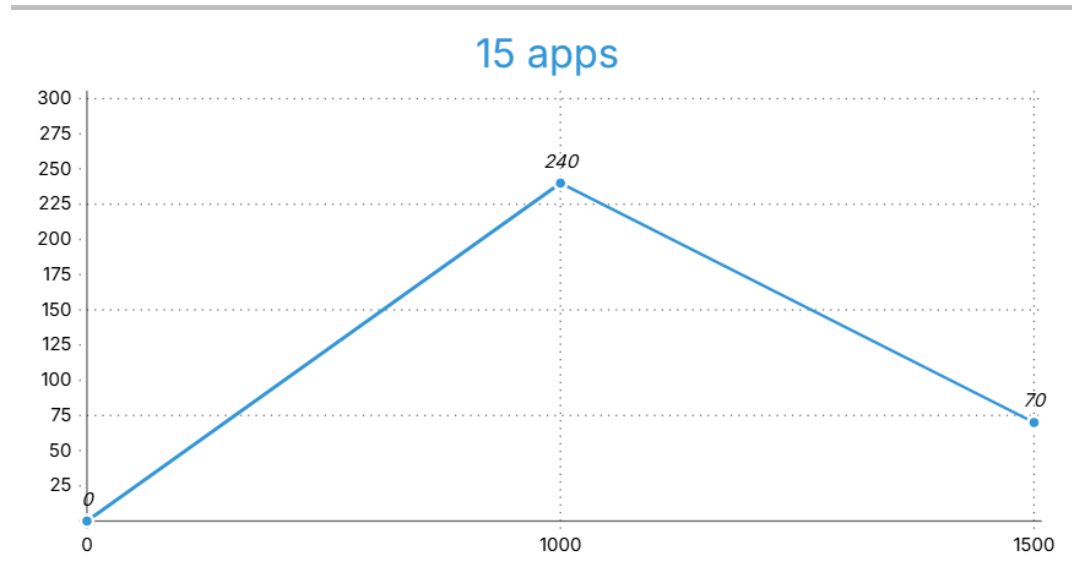
```

Graphs for 15 apps

Axes

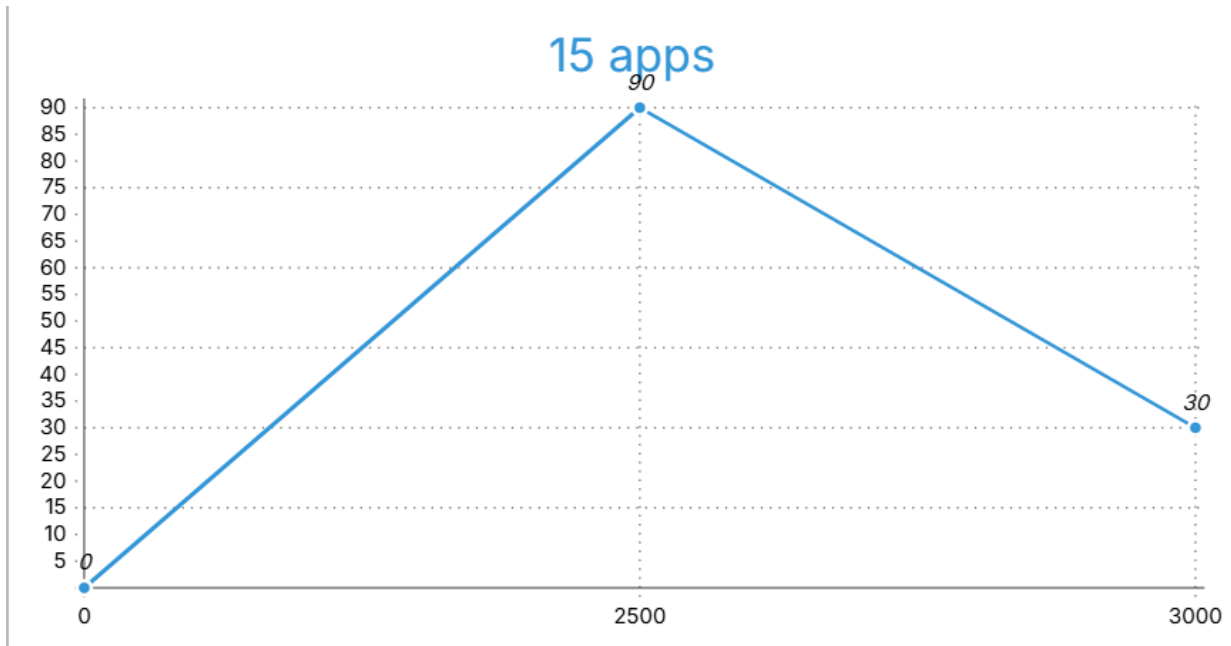
X axis- Request rate

Y axis-Average response time(ms)



Failed cases

When request rate is 2500/min and 3000/min



Stress test performed for 25 apps :-

Latency - 50sec

- Request rate :- 1000

```
4 export const options = {
5   scenarios: {
6     constant request rate: {
7       executor: 'constant-arrival-rate',
8       rate:1000, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '20m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
14    },
15  },

```

PROBLEMS OUTPUT DEBUG CONSOLE **TERMINAL** PORTS

http req duration
✗ 'p(95)<2000' p(95)=51.01s

http req failed
✓ 'rate<0.01' rate=0.00%

TOTAL RESULTS

| | | |
|-----------------------|---------|--------------------|
| checks total..... | 20001 | 15.998996/s |
| checks succeeded..... | 100.00% | 20001 out of 20001 |
| checks_failed..... | 0.00% | 0 out of 20001 |

✓ auth status is 200

HTTP

| | |
|---------------------------------|---|
| http req duration..... | avg=50.24s min=50.03s med=50.08s max=51.81s p(90)=50.73s p(95)=51.01s |
| { expected response:true }..... | avg=50.24s min=50.03s med=50.08s max=51.81s p(90)=50.73s p(95)=51.01s |
| http req failed..... | 0.00% 0 out of 20001 |
| http_reqs..... | 20001 15.998996/s |

EXECUTION

| | |
|-------------------------|---|
| iteration_duration..... | avg=50.24s min=50.03s med=50.09s max=51.81s p(90)=50.73s p(95)=51.01s |
| iterations..... | 20001 15.998996/s |
| vus..... | 6 min=6 max=863 |
| vus_max..... | 2000 min=2000 max=2000 |

NETWORK

| | |
|--------------------|-----------------|
| data_received..... | 10 MB 8.0 kB/s |
| data_sent..... | 7.8 MB 6.2 kB/s |

running (20m50.1s), 0000/2000 VUs, 20001 complete and 0 interrupted iterations
constant request rate ✓ [=====] 0000/2000 VUs 20m0s 16.67 iters/s

- Request rate :- 1500

```
JS einvAuth.js > options > scenarios > constant_request_rate
4 export const options = {
5   scenarios: {
6     constant_request_rate: {
7       executor: 'constant-arrival-rate',
8       rate:1500, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '20m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
14    },
15  },
16  thresholds: {
17    http_req_duration: ['p(95)<2000'],
18    http_req_failed: ['rate<0.01'],
19  },
20 }
```

http_req failed
✓ 'rate<0.01' rate=0.00%

TOTAL RESULTS

```
checks total.....: 30001 23.999146/s
checks succeeded.....: 100.00% 30001 out of 30001
checks_failed.....: 0.00% 0 out of 30001
✓ auth status is 200
```

HTTP

```
http_req_duration.....: avg=50.07s min=50.03s med=50.05s max=50.85s p(90)=50.11s p(95)=50.15s
{ expected response:true }.....: avg=50.07s min=50.03s med=50.05s max=50.85s p(90)=50.11s p(95)=50.15s
http_req_failed.....: 0.00% 0 out of 30001
http_reqs.....: 30001 23.999146/s
```

EXECUTION

```
iteration duration.....: avg=50.07s min=50.03s med=50.05s max=50.86s p(90)=50.11s p(95)=50.15s
iterations.....: 30001 23.999146/s
vus.....: 7 min=7 max=1269
vus_max.....: 2000 min=2000 max=2000
```

NETWORK

```
data_received.....: 15 MB 12 kB/s
data_sent.....: 12 MB 9.3 kB/s
```

running (20m50.1s), 0000/2000 VUs, 30001 complete and 0 interrupted iterations
constant request rate / [=====] 0000/2000 VUs 20m0s 25.00 iters/s

- Request rate :- 2500

```
JS einvAuth.js > [options] scenarios
3
4 export const options = {
5   scenarios: {
6     constant request rate: {
7       executor: 'constant-arrival-rate',
8       rate: 2500, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '20m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
14    },
15  },
16  thresholds: {
17    http_req_duration: ['p(95)<2000'],
18    http_req_failed: ['rate<0.01'],
19  },
20 }

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
http_req failed
✓ 'rate<0.01' rate=0.00%

TOTAL RESULTS

checks total.....: 47846 38.275349/s
checks succeeded.....: 100.00% 47846 out of 47846
checks_failed.....: 0.00% 0 out of 47846

✓ auth status is 200

HTTP
http_req_duration.....: avg=49.99s min=38.76ms med=50.12s max=50.96s p(90)=50.23s p(95)=50.3s
{ expected_response:true }.....: avg=49.99s min=38.76ms med=50.12s max=50.96s p(90)=50.23s p(95)=50.3s
http_req_failed.....: 0.00% 0 out of 47846
http_reqs.....: 47846 38.275349/s

EXECUTION
dropped_iterations.....: 2155 1.723935/s
iteration_duration.....: avg=49.99s min=39.63ms med=50.12s max=50.96s p(90)=50.23s p(95)=50.3s
iterations.....: 47846 38.275349/s
vus.....: 11 min=11 max=2000
vus_max.....: 2000 min=2000 max=2000

NETWORK
data_received.....: 24 MB 19 kB/s
data_sent.....: 19 MB 15 kB/s

running (20m50.0s), 0000/2000 VUs, 47846 complete and 0 interrupted iterations
constant request rate ✓ [=====] 0000/2000 VUs 20m0s 41.67 iters/s
```


- Request rate :- 3000

```
JS eimvAuth.js > options > scenarios > constant_request_rate > rate
3
4 export const options = {
5   scenarios: {
6     constant_request_rate: {
7       executor: 'constant-arrival-rate',
8       rate: 3000, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '20m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
14    },
15  },
16}

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS bash +

http req duration
x 'p(95)<2000' p(95)=50.32s

http req failed
✓ 'rate<0.01' rate=0.00%

TOTAL RESULTS

checks_total.....: 48197 38.575163/s
checks_succeeded.....: 100.00% 48197 out of 48197
checks_failed.....: 0.00% 0 out of 48197

✓ auth status is 200

HTTP
http req duration.....: avg=49.91s min=38.77ms med=50.07s max=51.89s p(90)=50.24s p(95)=50.32s
{ expected response:true }.....: avg=49.91s min=38.77ms med=50.07s max=51.89s p(90)=50.24s p(95)=50.32s
http req failed.....: 0.00% 0 out of 48197
http reqs.....: 48197 38.575163/s

EXECUTION
dropped iterations.....: 11884 9.447501/s
iteration duration.....: avg=49.91s min=39.5ms med=50.07s max=51.89s p(90)=50.24s p(95)=50.32s
iterations.....: 48197 38.575163/s
vus.....: 33 min=33 max=2000
vus_max.....: 2000 min=2000 max=2000

NETWORK
data_received.....: 24 MB 19 kB/s
data_sent.....: 19 MB 15 kB/s

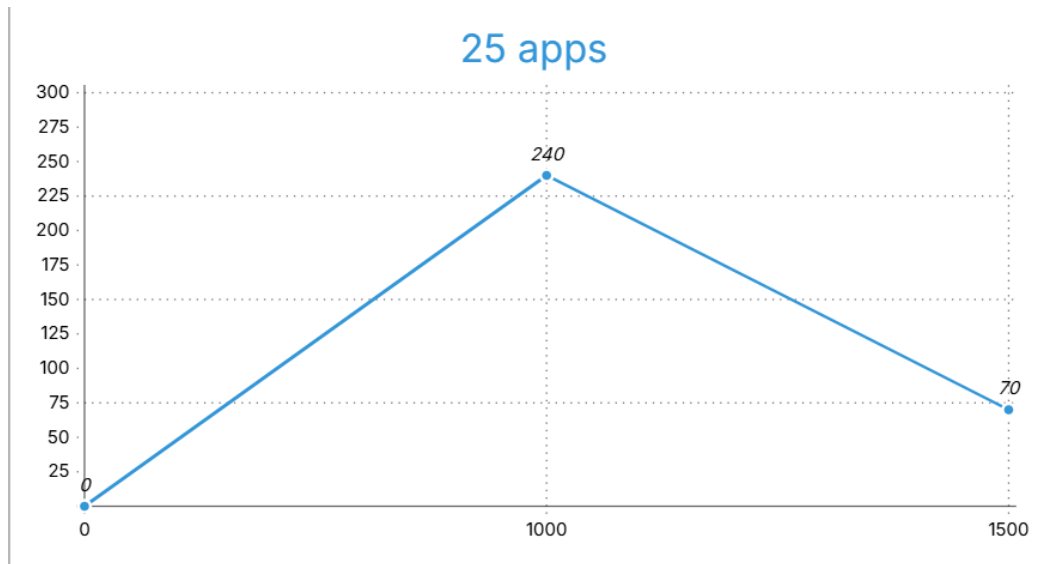
running (20m49.4s), 0000/2000 VUs, 48197 complete and 0 interrupted iterations
constant request rate ✓ [=====] 0000/2000 VUs 20m0s 50.00 iters/s
```

Graphs for 25 apps

Axes

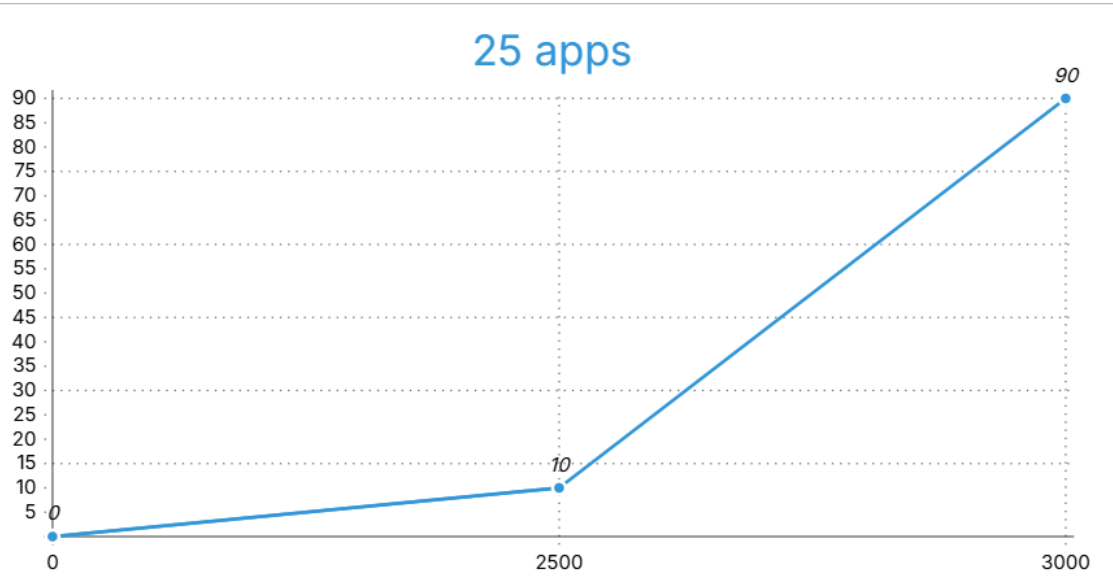
X axis- Request rate

Y axis-Average response time(ms)



Failed cases

When request rate is 2500/min and 3000/min



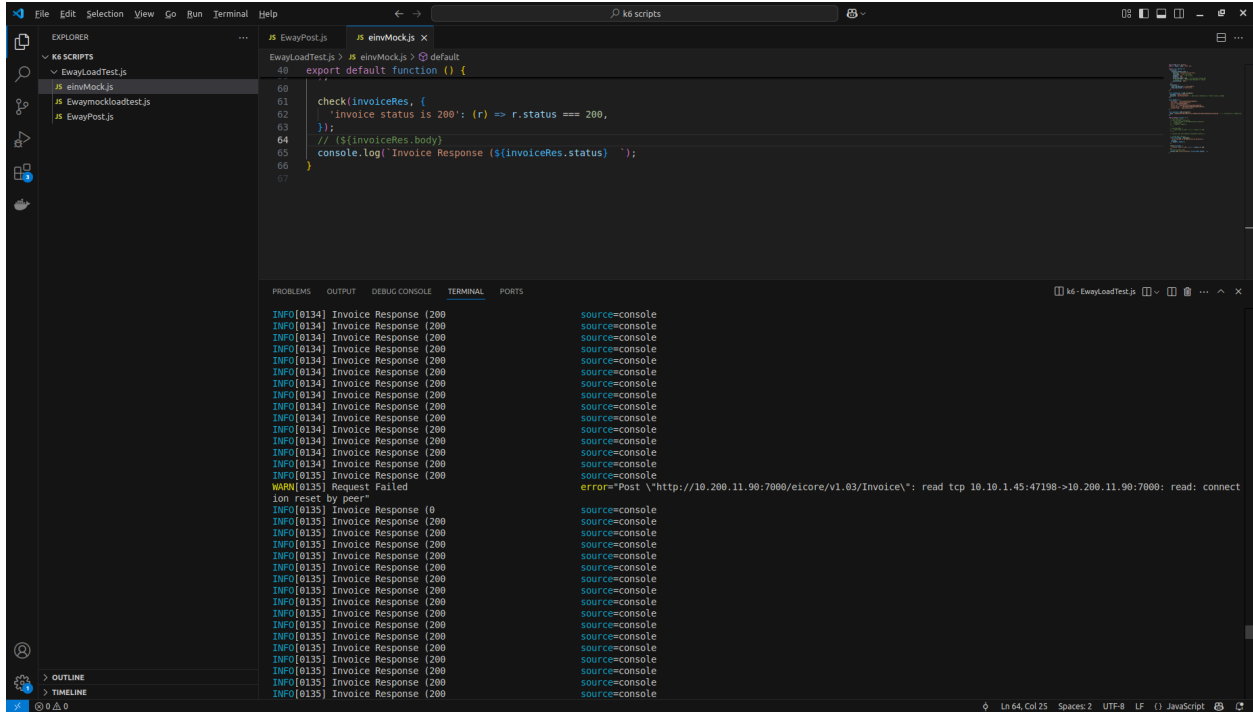
Errors

```
02129b3r/Sa40C06l41/5uBQFKCf41SPyFQZydc+u03ACBReoId899PW(LPC)FLpIeFUj5094tXxRgJ7DRF4KrlWdWfDPJ7B4alJHTXqg+XPSWJ39ZVQMPBRH47pMBB1Vu55DyHPhnDzwdJv752+658PyP40MxT9PhAD5CW2rBY3pUI786e24cqxK1u7Z7eBhOT735kblZiEMTKUUMm32fTE8B45LAU7f68faoCTQduoFqX5GzomAFef72eTFB0d1lvqgeV93JrkmlZU1RUPY54B88mV9wC07551L2ZesocBLK8pTnfm/0A/y3TbTA8Bdaed9Mxh4vcJ2LUI0UB4wd0qoHIEY8DAy/SjXQXSxhwhw+H0397Pds4AUW300ml1Jus5-s1Lo1LLCj0d88lneWUHQpWZB3m2Fq724+3H8Bp4vY3f55fKlCCd1B7Jd0x0Pesa1B+42TWAlY0U338xvfJmJ12KX0XK4A1H0AULL50hEACUe8d8BUCNj3May0TP3a3k4rum2Mh6L2R2XjUEdABL2JfVmqpcdmv0Y/nw3AfH32vnsEoJvEHYKtZp2wHA/pU0wGV/6P0wanw0J0c+Tawley12AlqFALPFkYEZmpuJY00Wdxrbc3YmWxHKG35hU182b9G6W0ZQMXCoa18PCFR8879w471TntFY90kqVThT1Ts/K4ERdEq/40LVrTfhqxk61ffktp38T079XhM7Z5ysh0Jsw2VQ5EuBkXp8RmL345caMI65uftU01w8P1u0Bsbh9cp9T3670ny5ULz1f1F8AR82Y30d)q5zV8eeelcW6mPF39uM87jBEmRDP59m25OUTg/cGd0cens3R0B8W4Rg31LW6Jnx1XK7KEXSpCULgxh0Jb4vAXL8B46deYhqd0auXvxdxmpYV5208fCgE+fwCEB8hY/WL0RfBJE2L0RPJHT02VQpqsAL5Sj/n0CchqKXh2h2L/0Nkv556Frv2XhVg1cFUTUXXAHK1U0bWhmJ0PvPy64u8ges0P5+5b1V0X0pXKag8Pki1gWV90W50cpl58vXq580w1B/80KCMvrfes0k11KJ29wCwCp5vrfZjme01eHowLV3G2688wmu5/1x0858vrfqj688lU57==+InfoPLS+null}}: source=console

WARN [1217] Request Failed
INFO [1217] Invoice Response (0) (null):
error="Post \"http://10.200.11.90:7000/eicore/v1.03/Invoice\": dial: i/o timeout"
source=console
WARN [1222] Request Failed
INFO [1222] Invoice Response (0) (null):
error="Post \"http://10.200.11.90:7000/eicore/v1.03/Invoice\": dial: i/o timeout"
source=console
WARN [1223] Request Failed
INFO [1223] Invoice Response (0) (null):
error="Post \"http://10.200.11.90:7000/eicore/v1.03/Invoice\": dial: i/o timeout"
source=console
WARN [1224] Request Failed
INFO [1224] Invoice Response (0) (null):
error="Post \"http://10.200.11.90:7000/eicore/v1.03/Invoice\": dial: i/o timeout"
source=console
WARN [1225] Request Failed
INFO [1225] Invoice Response (0) (null):
error="Post \"http://10.200.11.90:7000/eicore/v1.03/Invoice\": dial: i/o timeout"
source=console
WARN [1226] Request Failed
INFO [1226] Invoice Response (0) (null):
error="Post \"http://10.200.11.90:7000/eicore/v1.03/Invoice\": dial: i/o timeout"
source=console

THRESHOLDS
http_req_duration
  p(95)<2000 p(95)=271.78ms
http_req_failed
  rate<0.01 rate=0.40%

TOTAL RESULTS
checks total..... 20001 16.27443/s
```



```
File Edit Selection View Go Run Terminal Help
k6 scripts

EXPLORER
K6 SCRIPTS
  EwayLoadTest.js
  EwayMock.js
  EwayMockloadTest.js
  EwayPost.js

EwayPost.js
1 import http from 'k6/http';
2 import { check, sleep } from 'k6';
3
4 export const options = {
5   scenarios: {
6     constant_request_rate: {
7       executor: 'constant-arrival-rate',
8       rate: 1000, // 500 iterations
9       timeUnit: '1m', // per minute
10      duration: '20m',
11      preAllocatedVUs: 2000, // Pre-allocate enough VUs
12      // maxVUs: 50, // Allow some headroom for spikes
13      gracefulStop: '300s',
14    },
15  },
16  thresholds: {
17    http_req_duration: ['p(95)<2000'],
18  },
19 };

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
bash - EwayLoadTest.js

TOTAL RESULTS
checks_total.....: 6501 16.045887/s
checks_succeeded.....: 97.12% 6314 out of 6501
checks_failed.....: 2.87% 187 out of 6501

x invoice status is 200
  97% - / 6314 / x 187

HTTP
http_req_duration.....: avg=14.87s min=0s med=15.08s max=15.58s p(90)=15.1s p(95)=15.12s
{ expected response: true }.....: avg=15.08s min=15.04s med=15.08s max=15.58s p(90)=15.11s p(95)=15.12s
http_req_failed.....: 2.87% 187 out of 6501
http_reqs.....: 6501 16.045887/s

EXECUTION
iteration_duration.....: avg=15.16s min=10.07s med=15.13s max=30s p(90)=15.17s p(95)=15.22s
iterations.....: 6501 16.045887/s
vus.....: 252 min=15 max=263
vus_max.....: 2000 min=2000 max=2000

NETWORK
data_received.....: 40 MB 98 kB/s
data_sent.....: 2.7 MB 6.8 kB/s

running (06m45.2s), 0000/2000 VUs, 6501 complete and 252 interrupted iterations
constant_request_rate {=====} | 0199/2000 VUs 06m45.1s/20m0s 16.67 iters/s
ERR! [6405] test run was aborted because k6 received a 'interrupt' signal
akshat@mlispl-pw03nmh0:~/k6 scripts/EwayLoadTest.js
```

```
File Edit Selection View Go Run Terminal Help
k6 scripts

EXPLORER
K6 SCRIPTS
  EwayLoadTest.js
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akshat@mlispl-pw03nmh0:~/k6 scripts/EwayLoadTest.js
```

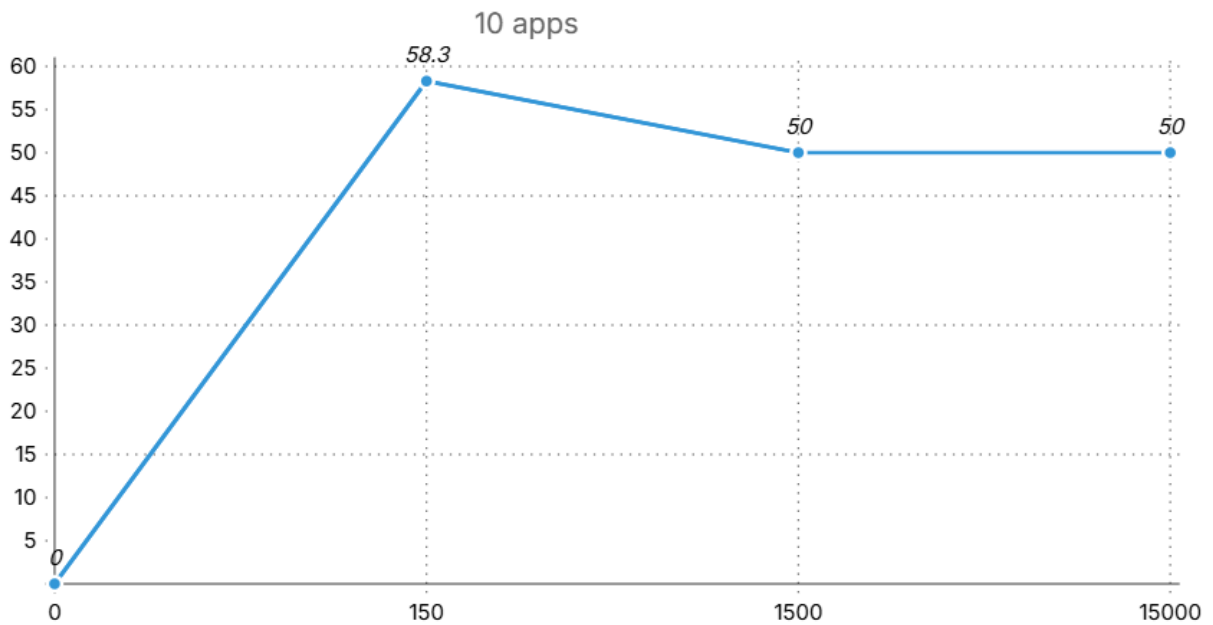
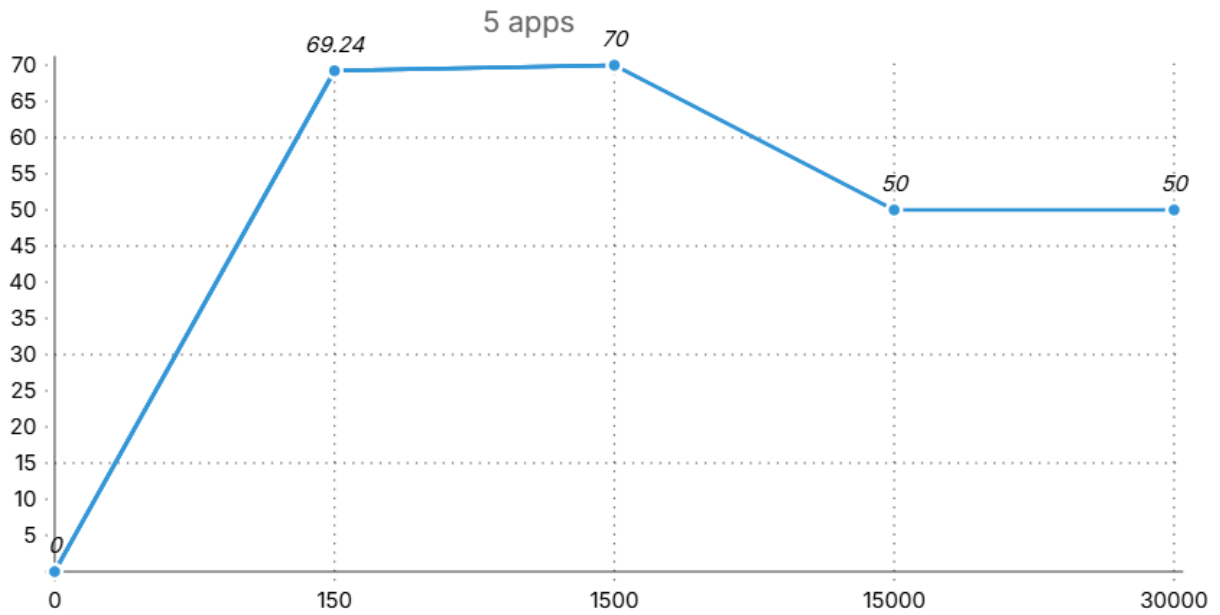
Graphs

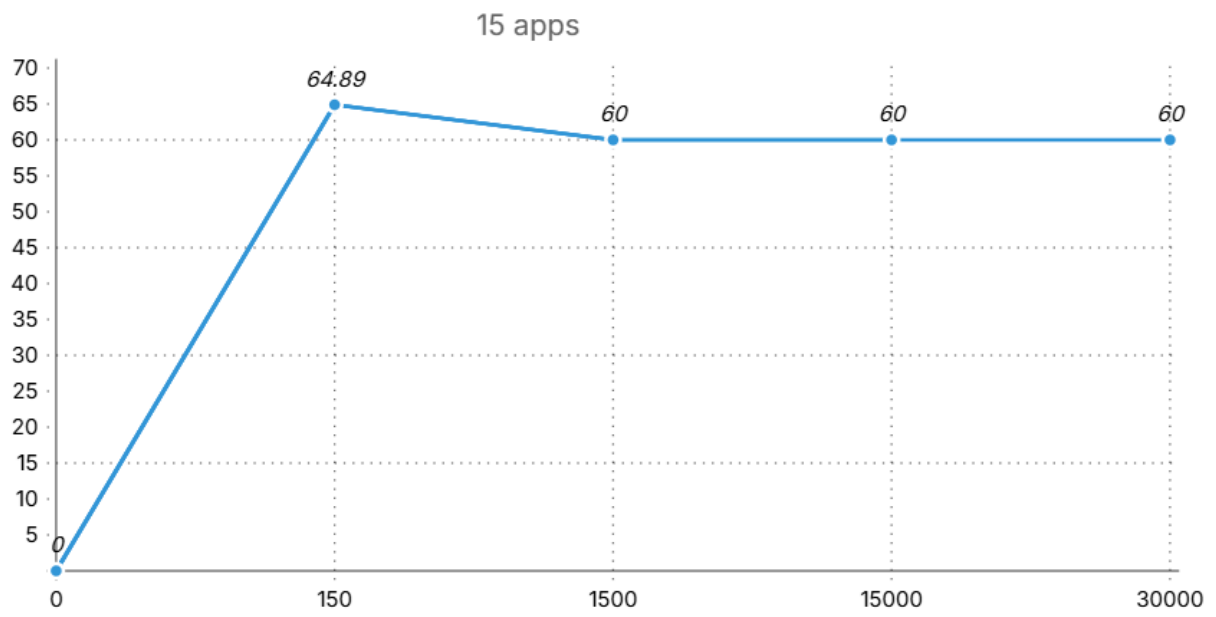
For load test graph

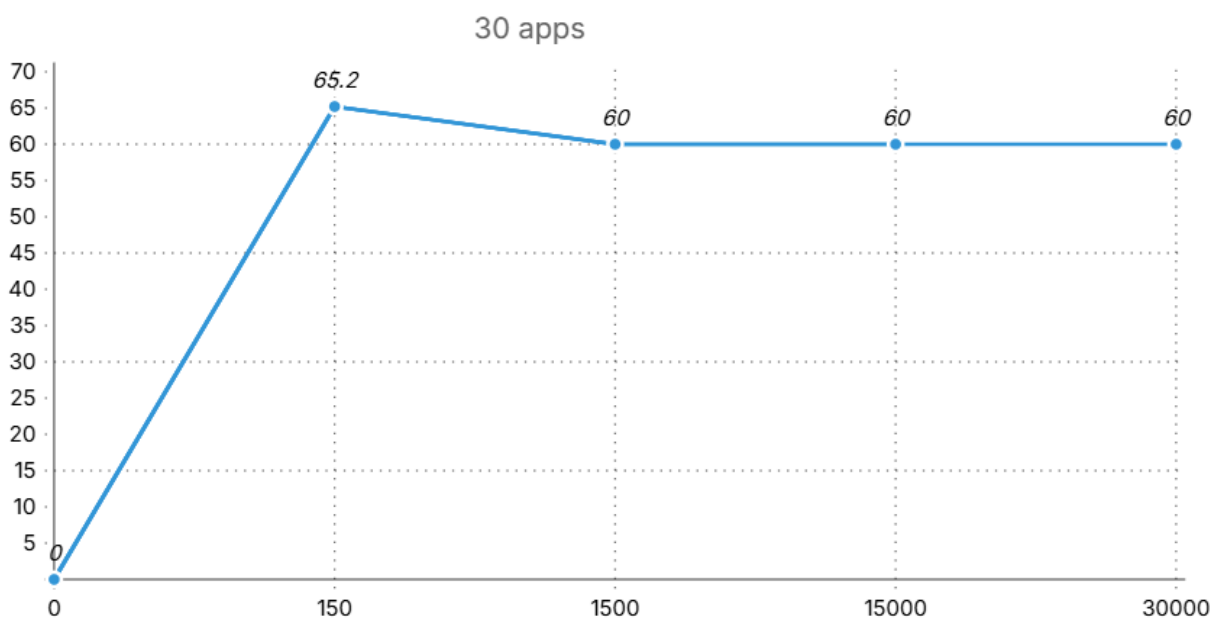
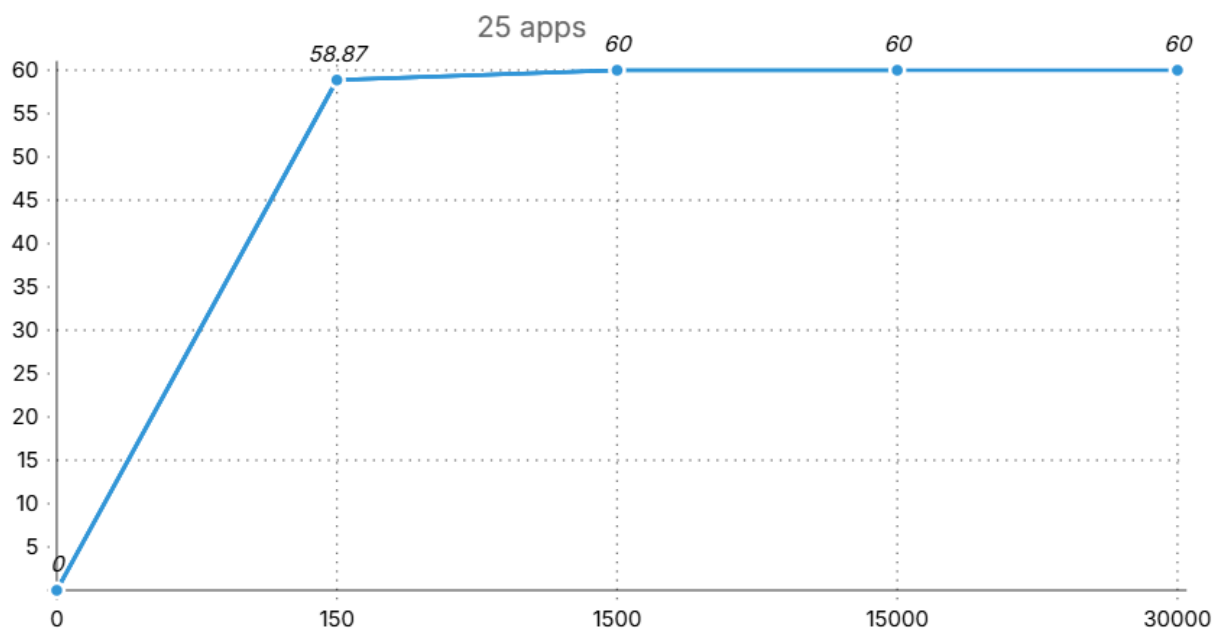
Axes

On X axis, latency in ms

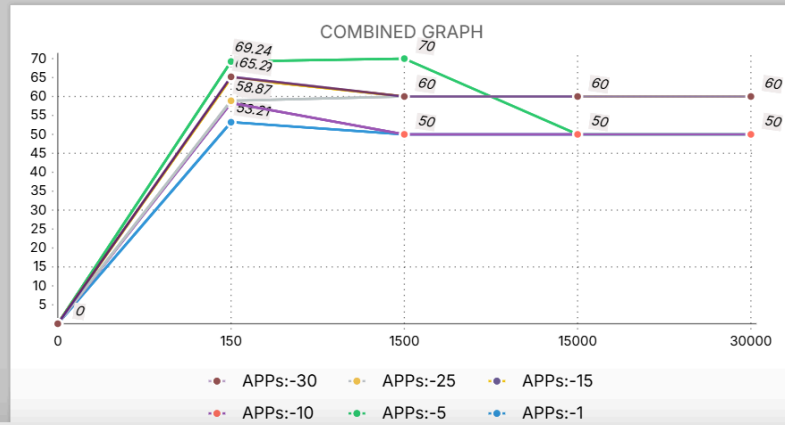
On Y axis, Average response time in ms







TA ▼



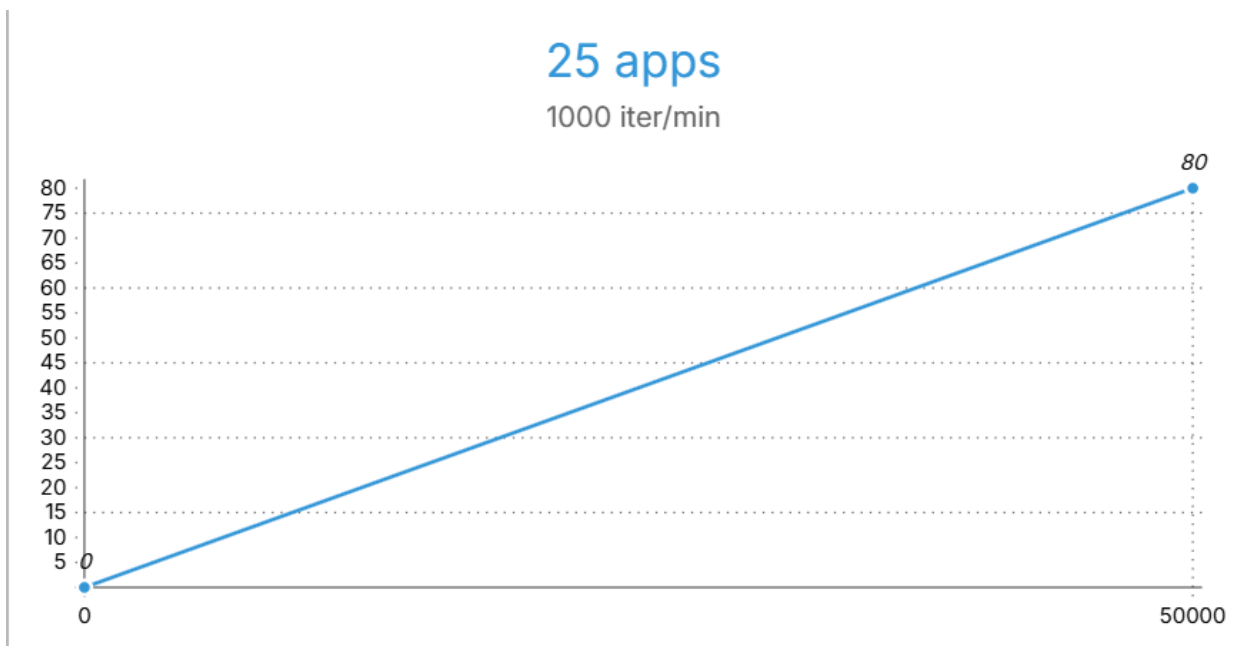
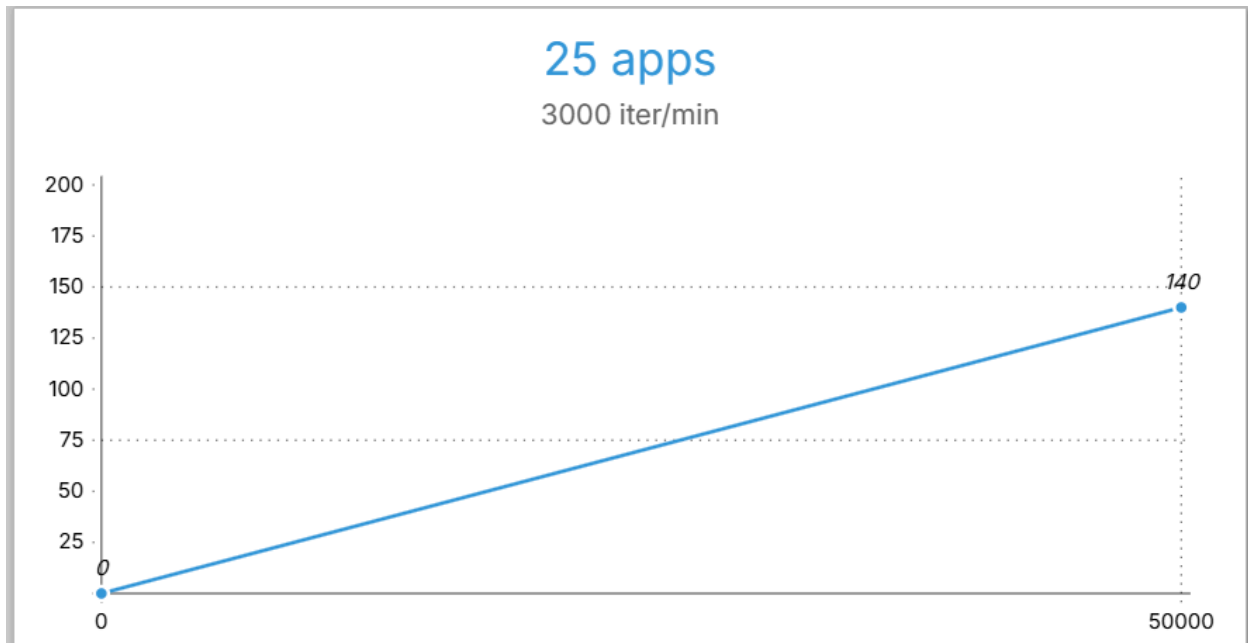
| | 0 | 150 | 1500 | 15000 | 30000 |
|----------|---|-------|------|-------|-------|
| APPs:-1 | 0 | 53.21 | 50 | 50 | 50 |
| APPs:-5 | 0 | 69.24 | 70 | 50 | 50 |
| APPs:-10 | 0 | 58.3 | 50 | 50 | 50 |
| APPs:-15 | 0 | 64.89 | 60 | 60 | 60 |
| APPs:-25 | 0 | 58.87 | 60 | 60 | 60 |
| APPs:-30 | 0 | 65.2 | 60 | 60 | 60 |
| | | | | | |

For stress test graph

Axes

On X axis, latency in ms

On Y axis, Average response time in ms



Conclusion

Based on the results from the load and stress testing performed using K6, the **optimized solution** is:

- **Number of Applications:** 25 apps
- **Server Configuration:**
 - **CPU:** 1 CPU
 - **RAM:** 8 GB
- **Optimal Request Rate:** 1500 requests per minute