总结：对不同内存 2g,1g,256m,128m,64m 作为 gateway-server-0.0.1-SNAPSHOT.jar 参数进行压测 8088 端口，发现在并发数为 15 左右都能达到最大的 RPS：3400 左右，

最终发现该端口返回如下页面，基本没有业务处理，所以内存的选择与具体的业务是强关联的

如下为详细压测数据：

java -Xms2g -Xmx2g -Xloggc:gc.log -XX:-UseAdaptiveSizePolicy -XX:+PrintGCDetails -XX:+PrintGCDateStamps -jar gateway-server-0.0.1-SNAPSHOT.jar

Requests: 100000

RPS: 3188

90th Percentile: 2ms

95th Percentile: 3ms

99th Percentile: 4ms

Average: 1.6ms

Min: 0ms

Max: 45ms

Status: finished

Start time: 2021-01-22T15:01:37.163+08:00

Finish time: 2021-01-22T15:02:08.531+08:00

Command: sb -u http://127.0.0.1:8088 -c 10 -n 100000

equests: 100000

RPS: 3314.5

90th Percentile: 3ms

95th Percentile: 3ms

99th Percentile: 4ms

Average: 2ms

Min: 1ms

Max: 44ms

Status: finished

Start time: 2021-01-22T15:00:29.971+08:00

Finish time: 2021-01-22T15:01:00.141+08:00

Command: sb -u http://127.0.0.1:8088 -c 12 -n 100000

Requests: 100000

RPS: 3430.4

90th Percentile: 3ms

95th Percentile: 4ms

99th Percentile: 5ms

Average: 2.4ms

Min: 1ms

Max: 58ms

Status: finished

Start time: 2021-01-22T14:57:27.298+08:00

Finish time: 2021-01-22T14:57:56.450+08:00

Command: sb -u http://127.0.0.1:8088 -c 15 -n 100000

Requests: 100000

RPS: 3427.8

90th Percentile: 4ms

95th Percentile: 4ms

99th Percentile: 6ms

Average: 2.8ms

Min: 0ms

Max: 52ms

Status: finished

Start time: 2021-01-22T14:55:16.886+08:00

Finish time: 2021-01-22T14:55:46.060+08:00

Command: sb -u http://127.0.0.1:8088 -c 18 -n 100000

Requests: 100000

RPS: 3290.7

90th Percentile: 4ms

95th Percentile: 5ms

99th Percentile: 7ms

Average: 3.2ms

Min: 1ms

Max: 52ms

Status: finished

Start time: 2021-01-22T14:49:45.355+08:00

Finish time: 2021-01-22T14:50:15.744+08:00

Command: sb -u http://127.0.0.1:8088 -c 20 -n 100000

Requests: 100000

RPS: 2993.8

90th Percentile: 5ms

95th Percentile: 6ms

99th Percentile: 9ms

Average: 3ms

Min: 0ms

Max: 66ms

Status: finished

Start time: 2021-01-22T14:53:27.927+08:00

Finish time: 2021-01-22T14:54:01.330+08:00

Command: sb -u http://127.0.0.1:8088 -c 25 -n 100000

Requests: 100000

RPS: 2683

90th Percentile: 6ms

95th Percentile: 8ms

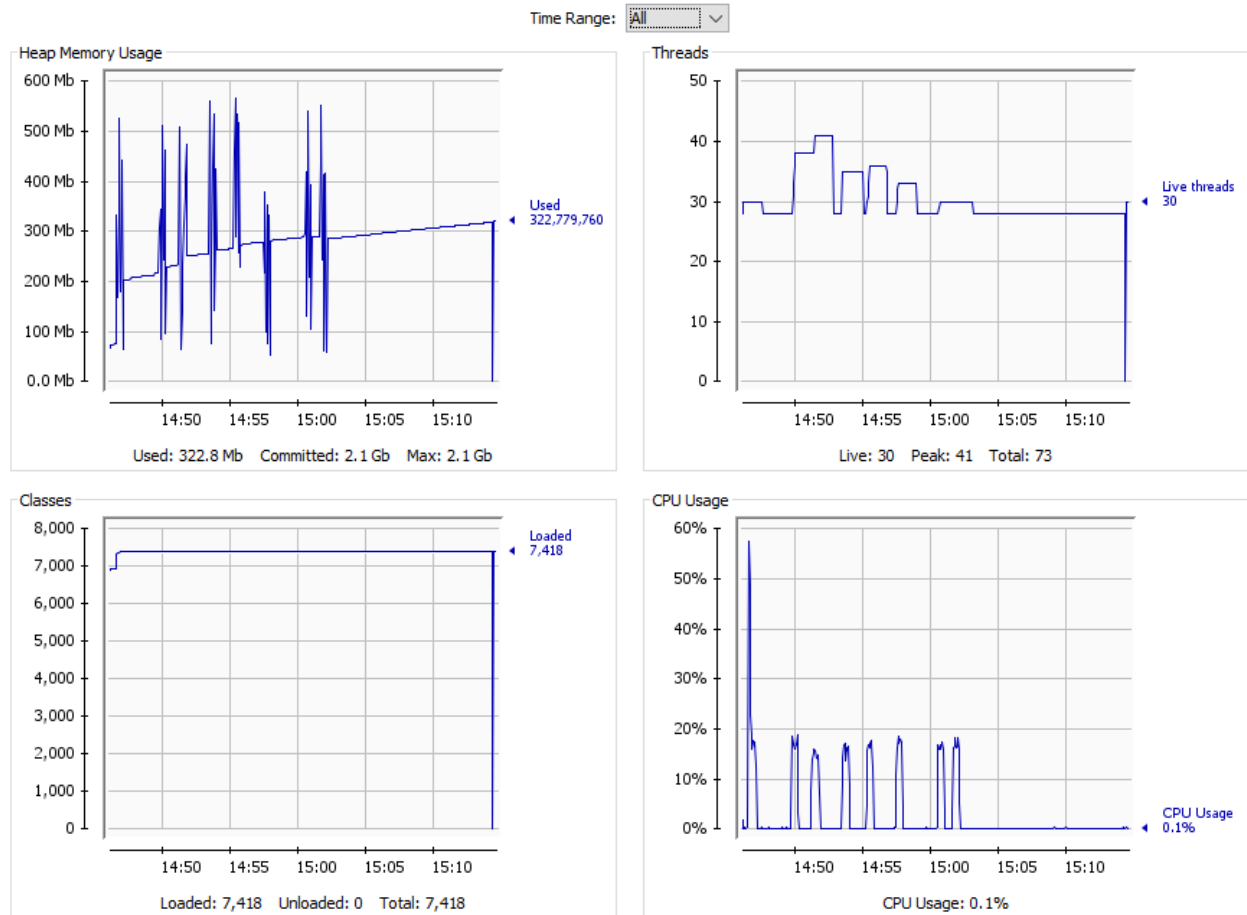99th Percentile: 12ms

Average: 3.3ms

Min: 0ms

Max: 63ms

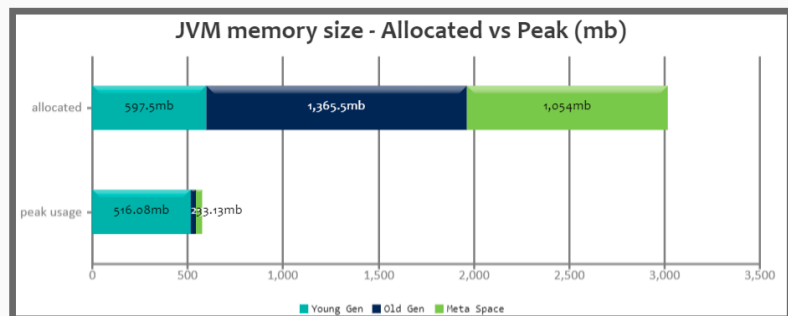Status: finished

Start time: 2021-01-22T14:51:11.755+08:00

Finish time: 2021-01-22T14:51:49.026+08:00

Command: sb -u http://127.0.0.1:8088 -c 30 -n 100000

Time Range: All ▾

Heap Memory Usage

Used: 322.8 Mb   Committed: 2.1 Gb   Max: 2.1 Gb

Used
322,779,760

Threads

Live: 30   Peak: 41   Total: 73

Live threads
30

Classes

Loaded: 7,418   Unloaded: 0   Total: 7,418

Loaded
7,418

CPU Usage

CPU Usage: 0.1%

CPU Usage
0.1%

☰ JVM memory size

Generation	Allocated ❓	Peak ❓
Young Generation	597.5 mb	516.08 mb
Old Generation	1.33 gb	29.4 mb
Meta Space	1.03 gb	33.13 mb
Young + Old + Meta space	3.03 gb	575.35 mb

JVM memory size - Allocated vs Peak (mb)

allocated: 597.5mb | 1,365.5mb | 1,054mb

peak usage: 516.08mb | 33.13mb

Young Gen | Old Gen | Meta Space

🔍 Key Performance Indicators

(Important section of the report. To learn more about KPIs, click here)

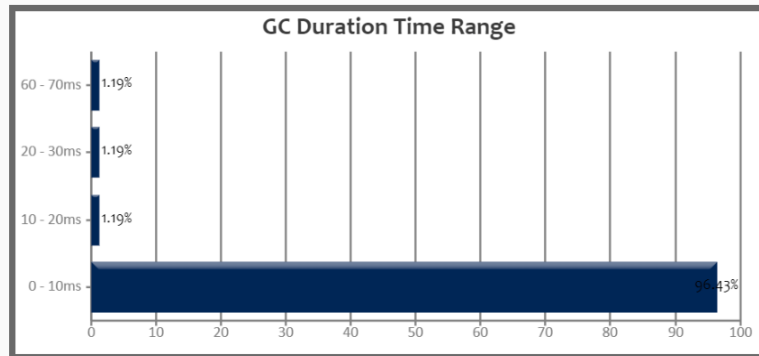**1** Throughput ❓ : 99.985%

2 Latency:

Avg Pause GC Time ❓	1.79 ms
Max Pause GC Time ❓	60.0 ms

GC **Pause** Duration Time Range ❓:

Duration (ms) 10 ms ⌄ Change	No. of GCs	Percentage
0 - 10	81	96.43%
10 - 20	1	1.19%
20 - 30	1	1.19%
60 - 70	1	1.19%

GC Duration Time Range

Range	Percentage
60 - 70ms	1.19%
20 - 30ms	1.19%
10 - 20ms	1.19%
0 - 10ms	96.43%

Total GC stats

Total GC count ❓	84
Total reclaimed bytes ❓	40.73 gb
Total GC time ❓	150 ms
Avg GC time ❓	1.79 ms
GC avg time std dev	7.74 ms
GC min/max time	0 / 60.0 ms
GC Interval avg time ❓	11 sec 912 ms

Minor GC stats

Minor GC count ❓	82
Minor GC reclaimed ❓	40.72 gb
Minor GC total time ❓	60.0 ms
Minor GC avg time ❓	0.732 ms
Minor GC avg time std dev	3.04 ms
Minor GC min/max time	0 / 20.0 ms
Minor GC Interval avg ❓	12 sec 206 ms

Full GC stats

Full GC Count	2
Full GC reclaimed ❓	11.01 mb
Full GC total time	90.0 ms
Full GC avg time ❓	45.0 ms
Full GC avg time std dev	15.0 ms
Full GC min/max time	30.0 ms / 60.0 ms
Full GC Interval avg	1 sec 948 ms

GC Pause Statistics

Pause Count	84
Pause total time	150 ms
Pause avg time ❓	1.79 ms
Pause avg time std dev	0.0
Pause min/max time	0 / 60.0 ms

java -Xms1g -Xmx1g -Xloggc:gc.log -XX:-UseAdaptiveSizePolicy -XX:+PrintGCDetails -XX:+PrintGCDateStamps -jar gateway-server-0.0.1-SNAPSHOT.jar

Requests: 100000
RPS: 3167.4
90th Percentile: 2ms
95th Percentile: 3ms
99th Percentile: 4ms
Average: 1.7ms
Min: 0ms
Max: 41ms

Status: finished
Start time: 2021-01-22T15:20:55.846+08:00
Finish time: 2021-01-22T15:21:27.417+08:00
Command: sb -u http://127.0.0.1:8088 -c 10 -n 100000

Requests: 100000
RPS: 3292.5
90th Percentile: 3ms
95th Percentile: 3ms
99th Percentile: 4ms
Average: 2ms
Min: 1ms
Max: 47ms

Status: finished
Start time: 2021-01-22T15:35:24.893+08:00
Finish time: 2021-01-22T15:35:55.265+08:00
Command: sb -u http://127.0.0.1:8088 -c 12 -n 100000

Requests: 100000
RPS: 3452.9
90th Percentile: 3ms
95th Percentile: 4ms
99th Percentile: 5ms
Average: 2.4ms
Min: 0ms
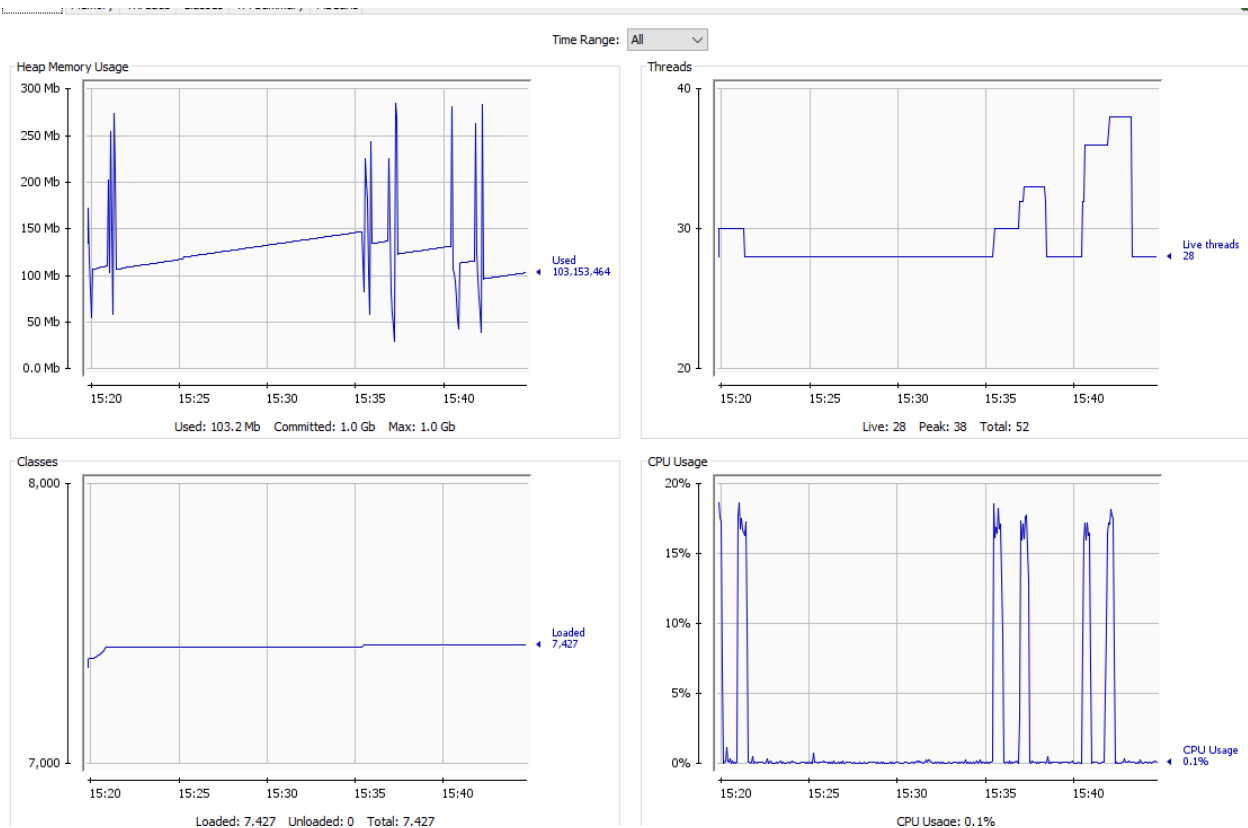**Max:** 50ms

Status: finished
Start time: 2021-01-22T15:36:55.331+08:00
Finish time: 2021-01-22T15:37:24.292+08:00
Command: sb -u http://127.0.0.1:8088 -c 15 -n 100000

Requests: 100000
RPS: 3403.9
90th Percentile: 4ms
95th Percentile: 4ms
99th Percentile: 6ms
Average: 2.8ms
Min: 0ms
Max: 52ms

Status: finished
Start time: 2021-01-22T15:40:25.442+08:00
Finish time: 2021-01-22T15:40:54.820+08:00
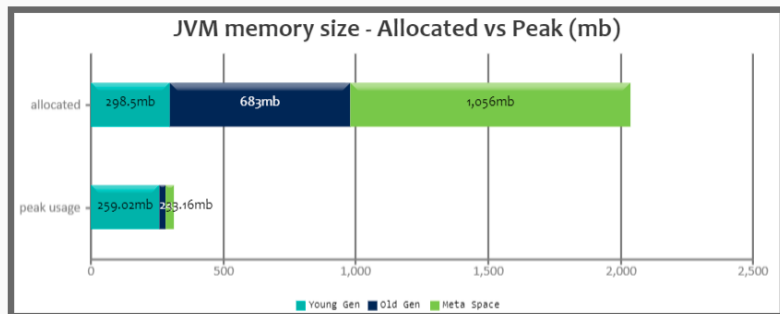**Command:** sb -u http://127.0.0.1:8088 -c 18 -n 100000

Requests: 100000
RPS: 3403.5
90th Percentile: 4ms
95th Percentile: 5ms
99th Percentile: 7ms
Average: 3ms
Min: 0ms
Max: 56ms

Status: finished
Start time: 2021-01-22T15:41:45.391+08:00
Finish time: 2021-01-22T15:42:14.773+08:00
Command: sb -u http://127.0.0.1:8088 -c 20 -n 100000

Heap Memory Usage

300 Mb
250 Mb
200 Mb
150 Mb
100 Mb
50 Mb
0.0 Mb

15:20 15:25 15:30 15:35 15:40

Used
103,153,464

Used: 103.2 Mb   Committed: 1.0 Gb   Max: 1.0 Gb

Threads

40

30

20

15:20 15:25 15:30 15:35 15:40

Live threads
28

Live: 28   Peak: 38   Total: 52

Classes

8,000

7,000

15:20 15:25 15:30 15:35 15:40

Loaded
7,427

Loaded: 7,427   Unloaded: 0   Total: 7,427

CPU Usage

20%

15%

10%

5%

0%

15:20 15:25 15:30 15:35 15:40

CPU Usage
0.1%

CPU Usage: 0.1%

▤ JVM memory size

Generation	Allocated ⓘ	Peak ⓘ
Young Generation	298.5 mb	259.02 mb
Old Generation	683 mb	24.11 mb
Meta Space	1.03 gb	33.16 mb
Young + Old + Meta space	2.03 gb	313.61 mb

JVM memory size - Allocated vs Peak (mb)

allocated — 298.5mb | 683mb | 1,056mb

peak usage — 259.02mb | 2.33.16mb

0   500   1,000   1,500   2,000   2,500

■ Young Gen   ■ Old Gen   ■ Meta Space

⚙ Key Performance Indicators

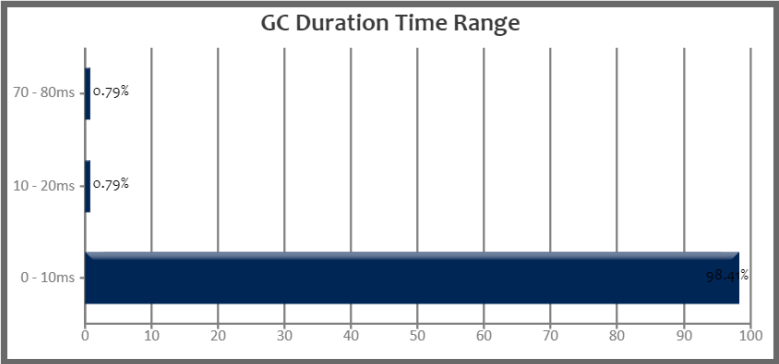(Important section of the report. To learn more about KPIs, click here)

① Throughput ❓ : 99.99%

② Latency:

Avg Pause GC Time ❓	**1.11 ms**
Max Pause GC Time ❓	70.0 ms

GC **Pause** Duration Time Range ❓ :

Duration (ms)		No. of GCs	Percentage
10	ms ▾ Change		
0 - 10		124	98.41%
10 - 20		1	0.79%
70 - 80		1	0.79%

GC Duration Time Range

70 - 80ms — 0.79%

10 - 20ms — 0.79%

0 - 10ms — 98.41%

(x-axis: 0 10 20 30 40 50 60 70 80 90 100)

Total GC stats

Total GC count ❓	126
Total reclaimed bytes ❓	30.67 gb
Total GC time ❓	140 ms
Avg GC time ❓	1.11 ms
GC avg time std dev	6.69 ms
GC min/max time	0 / 70.0 ms
GC Interval avg time ❓	11 sec 25 ms

Minor GC stats

Minor GC count ❓	124
Minor GC reclaimed ❓	30.66 gb
Minor GC total time	50.0 ms
Minor GC avg time ❓	0.403 ms
Minor GC avg time std dev	1.97 ms
Minor GC min/max time	0 / 10.0 ms
Minor GC Interval avg ❓	11 sec 204 ms

Full GC stats

Full GC Count	2
Full GC reclaimed ❓	2.49 mb
Full GC total time	90.0 ms
Full GC avg time ❓	45.0 ms
Full GC avg time std dev	25.0 ms
Full GC min/max time	20.0 ms / 70.0 ms
Full GC Interval avg ❓	1 sec 860 ms

GC Pause Statistics

Pause Count	126
Pause total time	140 ms
Pause avg time ❓	1.11 ms
Pause avg time std dev	0.0
Pause min/max time	0 / 70.0 ms

```
java -Xms512m -Xmx512m -Xloggc:gc.log -XX:-UseAdaptiveSizePolicy -XX:+PrintGCDetails -
XX:+PrintGCDateStamps  -jar gateway-server-0.0.1-SNAPSHOT.jar
```

Requests: 100000
RPS: 2792
90th Percentile: 3ms
95th Percentile: 3ms
99th Percentile: 5ms
Average: 1.8ms
Min: 0ms
Max: 211ms

Status: finished
Start time: 2021-01-22T15:55:51.441+08:00
Finish time: 2021-01-22T15:56:27.258+08:00
Command: sb -u http://127.0.0.1:8088 -c 10 -n 100000

Requests: 100000
RPS: 3337.4
90th Percentile: 3ms
95th Percentile: 3ms
99th Percentile: 4ms
Average: 2ms
Min: 0ms
Max: 48ms

Status: finished
Start time: 2021-01-22T15:56:58.363+08:00
Finish time: 2021-01-22T15:57:28.327+08:00
Command: sb -u http://127.0.0.1:8088 -c 12 -n 100000

Requests: 100000
RPS: 3430.1
90th Percentile: 3ms
95th Percentile: 4ms
99th Percentile: 5ms
Average: 2.4ms
Min: 0ms
Max: 47ms

Status: finished
Start time: 2021-01-22T15:59:08.562+08:00
Finish time: 2021-01-22T15:59:37.716+08:00
Command: sb -u http://127.0.0.1:8088 -c 15 -n 100000

Requests: 100000
RPS: 3427.2
90th Percentile: 4ms
95th Percentile: 5ms
99th Percentile: 6ms
Average: 2.9ms
Min: 0ms
Max: 53ms

Status: finished
Start time: 2021-01-22T16:00:41.481+08:00
Finish time: 2021-01-22T16:01:10.659+08:00
Command: sb -u http://127.0.0.1:8088 -c 18 -n 100000

Requests: 100000
RPS: 3356.5
90th Percentile: 4ms
95th Percentile: 5ms
99th Percentile: 7ms
Average: 3ms
Min: 0ms
Max: 60ms

Status: finished
Start time: 2021-01-22T16:01:56.070+08:00
Finish time: 2021-01-22T16:02:25.863+08:00
Command: sb -u http://127.0.0.1:8088 -c 20 -n 100000

Time Range: All

Heap Memory Usage

200 Mb
150 Mb
100 Mb
50 Mb
0.0 Mb

15:55   16:00   16:05   16:10

Used
50,892,408

Used: 50.9 Mb   Committed: 514.9 Mb   Max: 514.9 Mb

Threads

40

30

20

15:55   16:00   16:05   16:10

Live threads
37

Live: 37   Peak: 38   Total: 61

Classes

8,000

7,000

6,000

15:55   16:00   16:05   16:10

Loaded
7,415

Loaded: 7,415   Unloaded: 0   Total: 7,415

CPU Usage

60%
50%
40%
30%
20%
10%
0%

15:55   16:00   16:05   16:10

CPU Usage
0.1%

CPU Usage: 0.1%
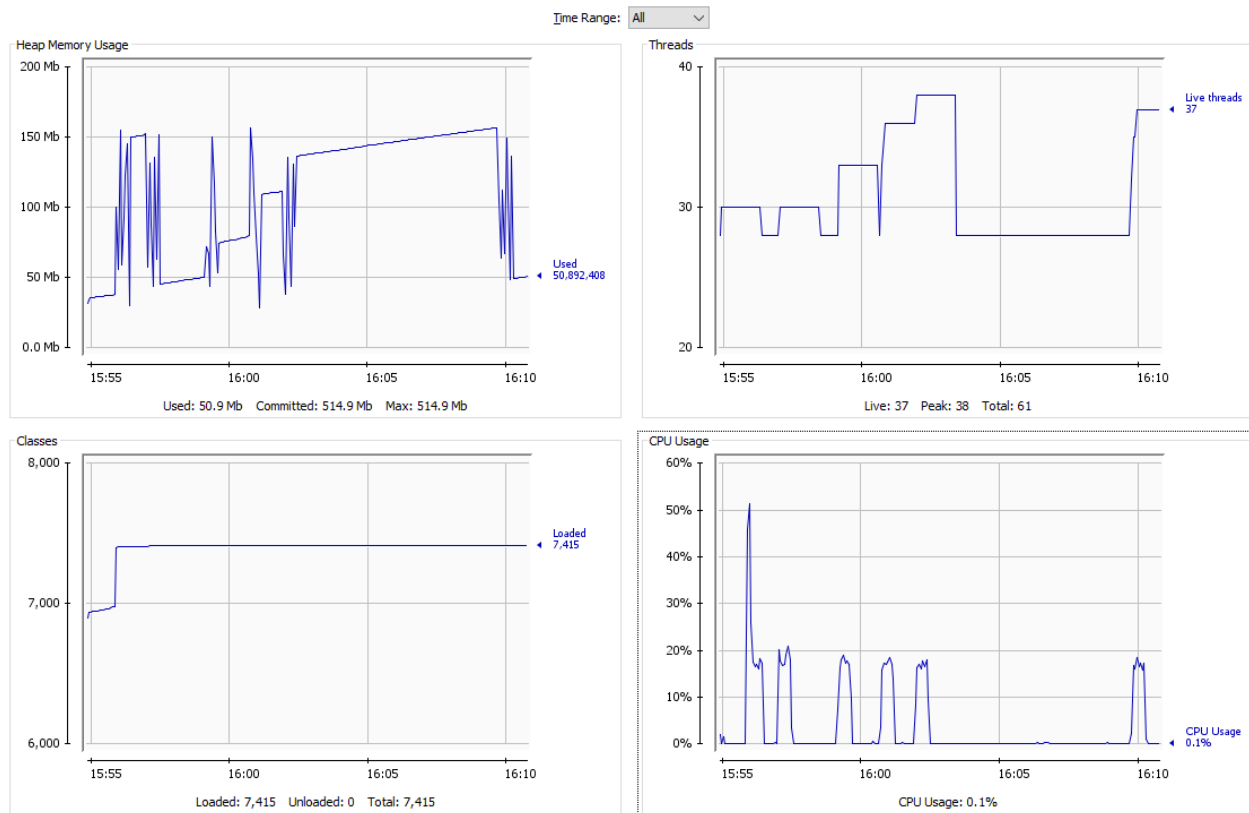
🗒 JVM memory size

Generation	Allocated ❓	Peak ❓
Young Generation	149.5 mb	141.53 mb
Old Generation	341.5 mb	26.37 mb
Meta Space	1.03 gb	33.16 mb
Young + Old + Meta space	1.53 gb	188.34 mb
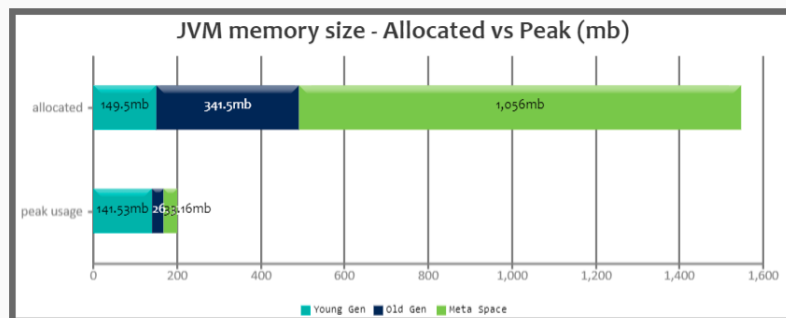
JVM memory size - Allocated vs Peak (mb)

allocated — 149.5mb | 341.5mb | 1,056mb

peak usage — 141.53mb 26.37mb 33.16mb

0   200   400   600   800   1,000   1,200   1,400   1,600

■ Young Gen   ■ Old Gen   ■ Meta Space

🔑 Key Performance Indicators

(Important section of the report. To learn more about KPIs, click here)

1 Throughput ❓ : 99.98%

2 Latency:

Avg Pause GC Time ❓	0.776 ms
Max Pause GC Time ❓	70.0 ms

GC **Pause** Duration Time Range ❓:

Duration (ms)		No. of GCs	Percentage
10	ms ▾ Change		
0 - 10		243	99.18%
10 - 20		1	0.41%
70 - 80		1	0.41%

GC Duration Time Range

70 - 80ms — 0.41%

10 - 20ms — 0.41%

0 - 10ms — 99.18%

(x-axis: 0 10 20 30 40 50 60 70 80 90 100)
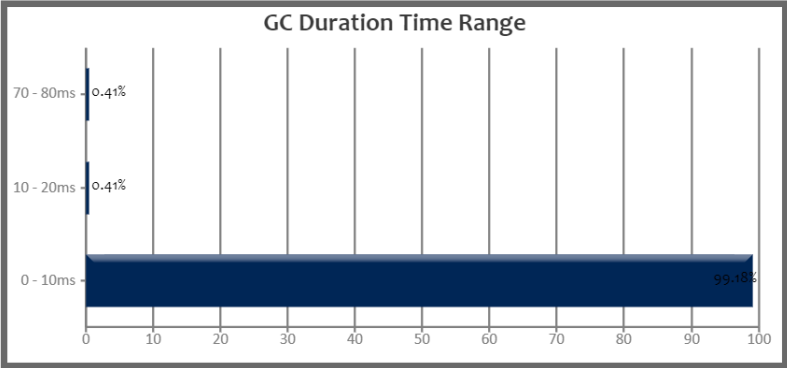
Total GC stats

Total GC count ❓	245
Total reclaimed bytes ❓	30.25 gb
Total GC time ❓	190 ms
Avg GC time ❓	0.776 ms
GC avg time std dev	5.01 ms
GC min/max time	0 / 70.0 ms
GC Interval avg time ❓	3 sec 844 ms

Minor GC stats

Minor GC count	243
Minor GC reclaimed	30.25 gb
Minor GC total time	100 ms
Minor GC avg time	0.412 ms
Minor GC avg time std dev	1.99 ms
Minor GC min/max time	0 / 10.0 ms
Minor GC Interval avg	3 sec 876 ms

Full GC stats

Full GC Count	2
Full GC reclaimed ❓	1.8 mb
Full GC total time	90.0 ms
Full GC avg time	45.0 ms
Full GC avg time std dev	25.0 ms
Full GC min/max time	20.0 ms / 70.0 ms
Full GC Interval avg	1 sec 925 ms

GC Pause Statistics

Pause Count	245
Pause total time	190 ms
Pause avg time ❓	0.776 ms
Pause avg time std dev	0.0
Pause min/max time	0 / 70.0 ms

```
java -Xms256m -Xmx256m -Xloggc:gc.log -XX:-UseAdaptiveSizePolicy -XX:+PrintGCDetails -
XX:+PrintGCDateStamps  -jar gateway-server-0.0.1-SNAPSHOT.jar
```

Requests: 100000
RPS: 2855.2
90th Percentile: 3ms
95th Percentile: 3ms
99th Percentile: 5ms
Average: 1.9ms
Min: 1ms
Max: 208ms

Status: finished
Start time: 2021-01-22T16:20:40.577+08:00
Finish time: 2021-01-22T16:21:15.602+08:00
Command: sb -u http://127.0.0.1:8088 -c 10 -n 100000

Requests: 100000
RPS: 3337.2
90th Percentile: 3ms
95th Percentile: 3ms
99th Percentile: 4ms
Average: 2ms
Min: 0ms
Max: 43ms

Status: finished
Start time: 2021-01-22T16:22:43.885+08:00
Finish time: 2021-01-22T16:23:13.850+08:00
Command: sb -u http://127.0.0.1:8088 -c 12 -n 100000

Requests: 100000
RPS: 3358.3
90th Percentile: 3ms
95th Percentile: 4ms
99th Percentile: 5ms
Average: 2.4ms
Min: 0ms
Max: 50ms

Status: finished
Start time: 2021-01-22T16:23:50.560+08:00
Finish time: 2021-01-22T16:24:20.336+08:00
Command: sb -u http://127.0.0.1:8088 -c 15 -n 100000

Requests: 100000
RPS: 2923.1
90th Percentile: 4ms
95th Percentile: 4ms
99th Percentile: 6ms
Average: 2.3ms
Min: 0ms
Max: 54ms

Status: finished
Start time: 2021-01-22T16:25:15.869+08:00
Finish time: 2021-01-22T16:25:50.079+08:00
Command: sb -u http://127.0.0.1:8088 -c 18 -n 100000

Used: 66.5 Mb Committed: 257.4 Mb Max: 257.4 Mb

Live: 28 Peak: 36 Total: 43
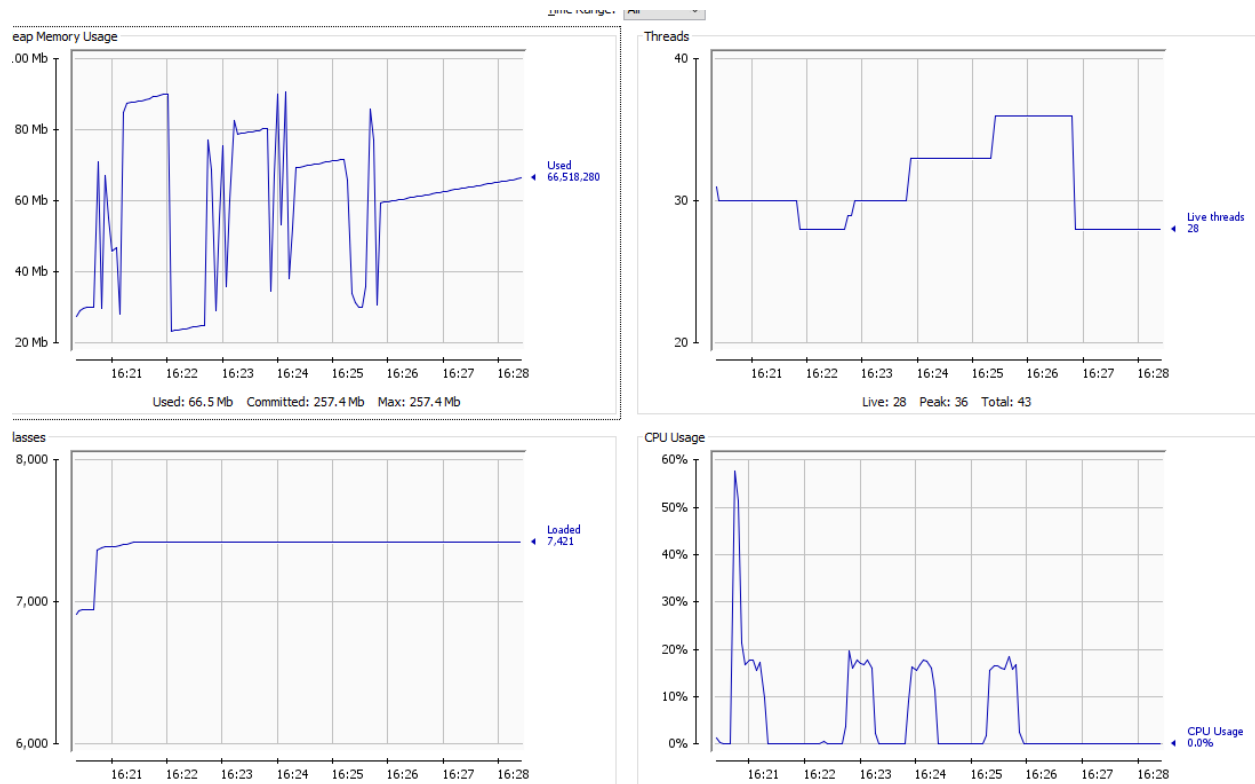
JVM memory size

Generation	Allocated ?	Peak ?
Young Generation	74.5 mb	74.5 mb
Old Generation	171 mb	26.98 mb
Meta Space	1.03 gb	33.16 mb
Young + Old + Meta space	1.28 gb	124.44 mb
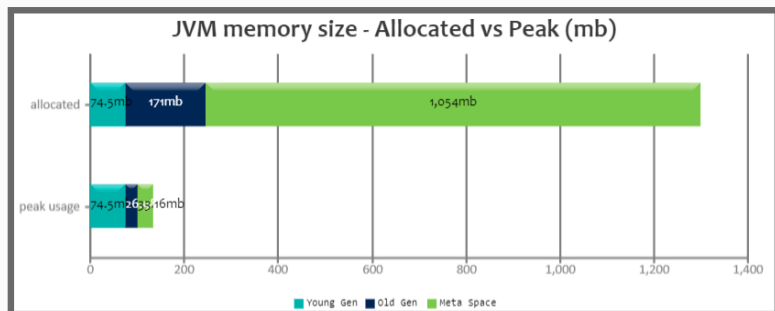
JVM memory size - Allocated vs Peak (mb)

🔍 Key Performance Indicators

(Important section of the report. To learn more about KPIs, click here)

① Throughput ❓ : 99.932%

② Latency:

Avg Pause GC Time ❓	0.697 ms
Max Pause GC Time ❓	70.0 ms

GC **Pause** Duration Time Range ❓ :

Duration (ms) 10 ms ⌄ Change	No. of GCs	Percentage
0 - 10	328	99.39%
10 - 20	1	0.3%
70 - 80	1	0.3%

GC Duration Time Range

Range	Percentage
70 - 80ms	0.3%
10 - 20ms	0.3%
0 - 10ms	99.39%
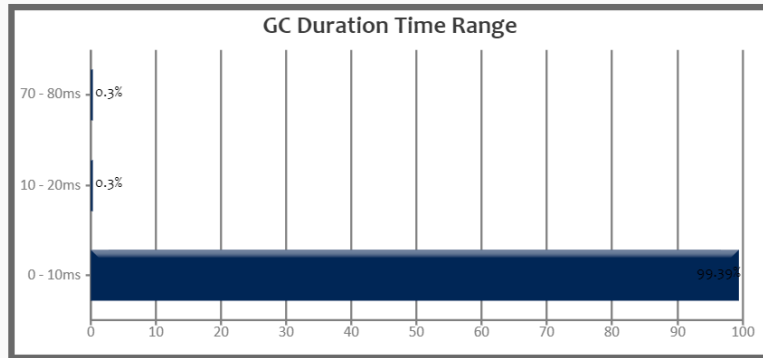
Total GC stats

Total GC count ❓	330
Total reclaimed bytes ❓	20.38 gb
Total GC time ❓	230 ms
Avg GC time ❓	0.697 ms
GC avg time std dev	4.45 ms
GC min/max time	0 / 70.0 ms
GC Interval avg time ❓	1 sec 28 ms

Minor GC stats

Minor GC count ❓	328
Minor GC reclaimed ❓	20.38 gb
Minor GC total time	140 ms
Minor GC avg time ❓	0.427 ms
Minor GC avg time std dev	2.02 ms
Minor GC min/max time	0 / 10.0 ms
Minor GC Interval avg ❓	1 sec 35 ms

Full GC stats

Full GC Count	2
Full GC reclaimed ❓	4.4 mb
Full GC total time	90.0 ms
Full GC avg time	45.0 ms
Full GC avg time std dev	25.0 ms
Full GC min/max time	20.0 ms / 70.0 ms
Full GC Interval avg ❓	1 sec 921 ms

GC Pause Statistics

Pause Count	330
Pause total time	230 ms
Pause avg time ❓	0.697 ms
Pause avg time std dev	0.0
Pause min/max time	0 / 70.0 ms

```
java -Xms128m -Xmx128m -Xloggc:gc.log -XX:-UseAdaptiveSizePolicy -XX:+PrintGCDetails -
XX:+PrintGCDateStamps  -jar gateway-server-0.0.1-SNAPSHOT.jar
```

Requests: 100000
RPS: 3314
90th Percentile: 3ms
95th Percentile: 4ms
99th Percentile: 5ms
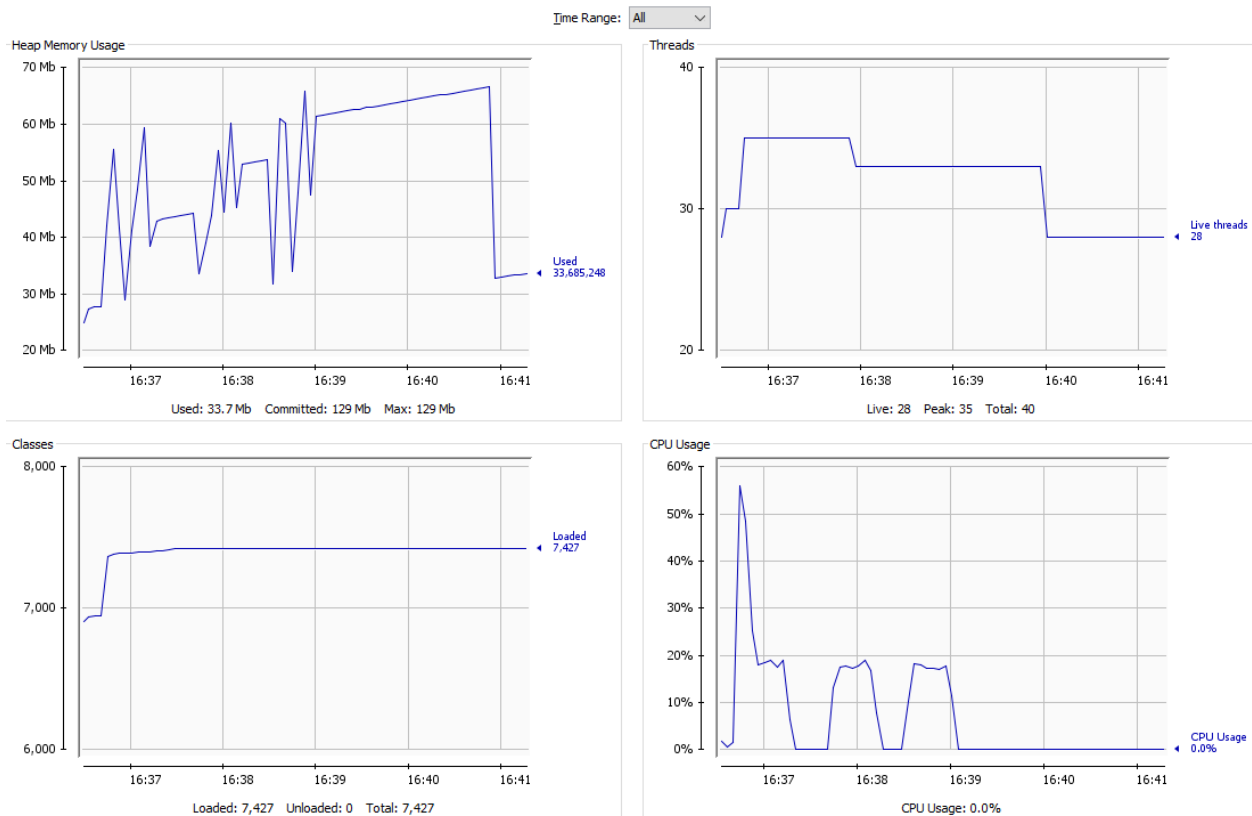**Average:** 2.4ms
Min: 0ms
Max: 47ms

Status: finished
Start time: 2021-01-22T16:38:30.193+08:00
Finish time: 2021-01-22T16:39:00.369+08:00
Command: sb -u http://127.0.0.1:8088 -c 15 -n 100000

Time Range: All

JVM memory size

Generation	Allocated	Peak
Young Generation	37.5 mb	37.5 mb
Old Generation	85.5 mb	30.74 mb
Meta Space	1.03 gb	33.12 mb
Young + Old + Meta space	1.15 gb	96.64 mb
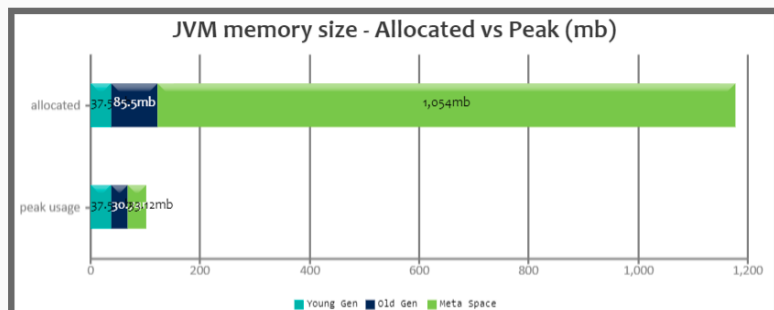
🔑 Key Performance Indicators

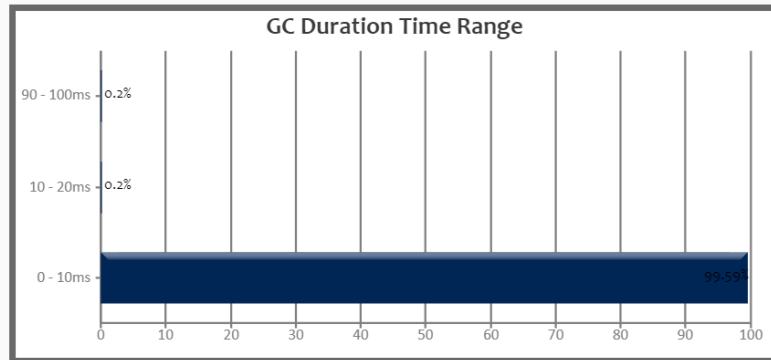(Important section of the report. To learn more about KPIs, click here)

1 Throughput ❓ : 99.854%

2 Latency:

Avg Pause GC Time ❓	0.489 ms
Max Pause GC Time ❓	90.0 ms

GC **Pause** Duration Time Range ❓:

Duration (ms) 10 ms ⌄ Change	No. of GCs	Percentage
0 - 10	489	99.59%
10 - 20	1	0.2%
90 - 100	1	0.2%

GC Duration Time Range

Range	Percentage
90 - 100ms	0.2%
10 - 20ms	0.2%
0 - 10ms	99.59

(x-axis: 0 10 20 30 40 50 60 70 80 90 100)

Total GC stats

Total GC count ❓	491
Total reclaimed bytes ❓	15.44 gb
Total GC time ❓	240 ms
Avg GC time ❓	0.489 ms
GC avg time std dev	4.44 ms
GC min/max time	0 / 90.0 ms
GC Interval avg time ❓	335 ms

Minor GC stats

Minor GC count ❓	489
Minor GC reclaimed ❓	15.43 gb
Minor GC total time	130 ms
Minor GC avg time ❓	0.266 ms
Minor GC avg time std dev	1.61 ms
Minor GC min/max time	0 / 10.0 ms
Minor GC Interval avg ❓	337 ms

Full GC stats

Full GC Count	2
Full GC reclaimed ❓	8.31 mb
Full GC total time	110 ms
Full GC avg time ❓	55.0 ms
Full GC avg time std dev	35.0 ms
Full GC min/max time	20.0 ms / 90.0 ms
Full GC Interval avg ❓	1 sec 888 ms

GC Pause Statistics

Pause Count	491
Pause total time	240 ms
Pause avg time ❓	0.489 ms
Pause avg time std dev	0.0
Pause min/max time	0 / 90.0 ms

```
java -Xms64m -Xmx64m -Xloggc:gc.log -XX:-UseAdaptiveSizePolicy -XX:+PrintGCDetails -
XX:+PrintGCDateStamps  -jar gateway-server-0.0.1-SNAPSHOT.jar
```