

D07_Grimoire

Laporan Testing Modul 3 Jarkom 2023

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7. Kepala suku dari Bredt Region memberikan resource server sebagai berikut:
Lawine, 4GB, 2vCPU, dan 80 GB SSD.
Linie, 2GB, 2vCPU, dan 50 GB SSD.
Lugner 1GB, 1vCPU, dan 25 GB SSD.
aturlah agar Eisen dapat bekerja dengan maksimal, lalu lakukan testing dengan 1000 request dan 100 request/second. (7)

```
ab -n 1000 -c 100 http://granz.channel.d07.com/
```

```
root@Sein:/# ab -n 1000 -c 100 http://granz.channel.d07.com/
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
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Benchmarking granz.channel.d07.com (be patient)
Completed 100 requests
Completed 200 requests
Completed 300 requests
Completed 400 requests
Completed 500 requests
Completed 600 requests
Completed 700 requests
Completed 800 requests
Completed 900 requests
Completed 1000 requests
Finished 1000 requests

Server Software:      nginx/1.14.2
Server Hostname:      granz.channel.d07.com
```

```

Server Software:      nginx/1.14.2
Server Hostname:      granz.channel.d07.com
Server Port:          80

Document Path:        /
Document Length:       624 bytes

Concurrency Level:     100
Time taken for tests:   3.648 seconds
Complete requests:     1000
Failed requests:       666
  (Connect: 0, Receive: 0, Length: 666, Exceptions: 0)
Total transferred:     761666 bytes
HTML transferred:     624666 bytes
Requests per second:   274.16 [#/sec] (mean)
Time per request:      364.751 [ms] (mean)
Time per request:      3.648 [ms] (mean, across all concurrent requests)
Transfer rate:         203.92 [Kbytes/sec] received

Connection Times (ms)
      min    mean[+/-sd] median    max
Connect:    1     99 156.5      75    1164
Processing:  45    252 123.0     222    1385
Waiting:    20    251 122.2     221    1385
Total:      46    351 187.3     319    1494

Percentage of the requests served within a certain time (ms)
 50%    319
 66%    339
 75%    350
 80%    358
 90%    430
 95%    623
 98%   1283
 99%   1303
100%   1494 (longest request)
root@Sein:/#

```

8. Karena diminta untuk menuliskan grimoire, buatlah analisis hasil testing dengan 200 request dan 10 request/second masing-masing algoritma Load Balancer dengan ketentuan sebagai berikut:

- A. Nama Algoritma Load Balancer
- B. Report hasil testing pada Apache Benchmark
- C. Grafik request per second untuk masing masing algoritma.
- D. Analisis (8)

```
ab -n 200 -c 10 -g out.data http://granz.channel.d07.com/
```

- A. Round Robin

```

root@Sein:~# bash sein_8.sh
mkdir: cannot create directory 'benchmark': File exists
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking granz.channel.d07.com (be patient)
Completed 100 requests
Completed 200 requests
Finished 200 requests


Server Software:      nginx/1.14.2
Server Hostname:      granz.channel.d07.com
Server Port:          80

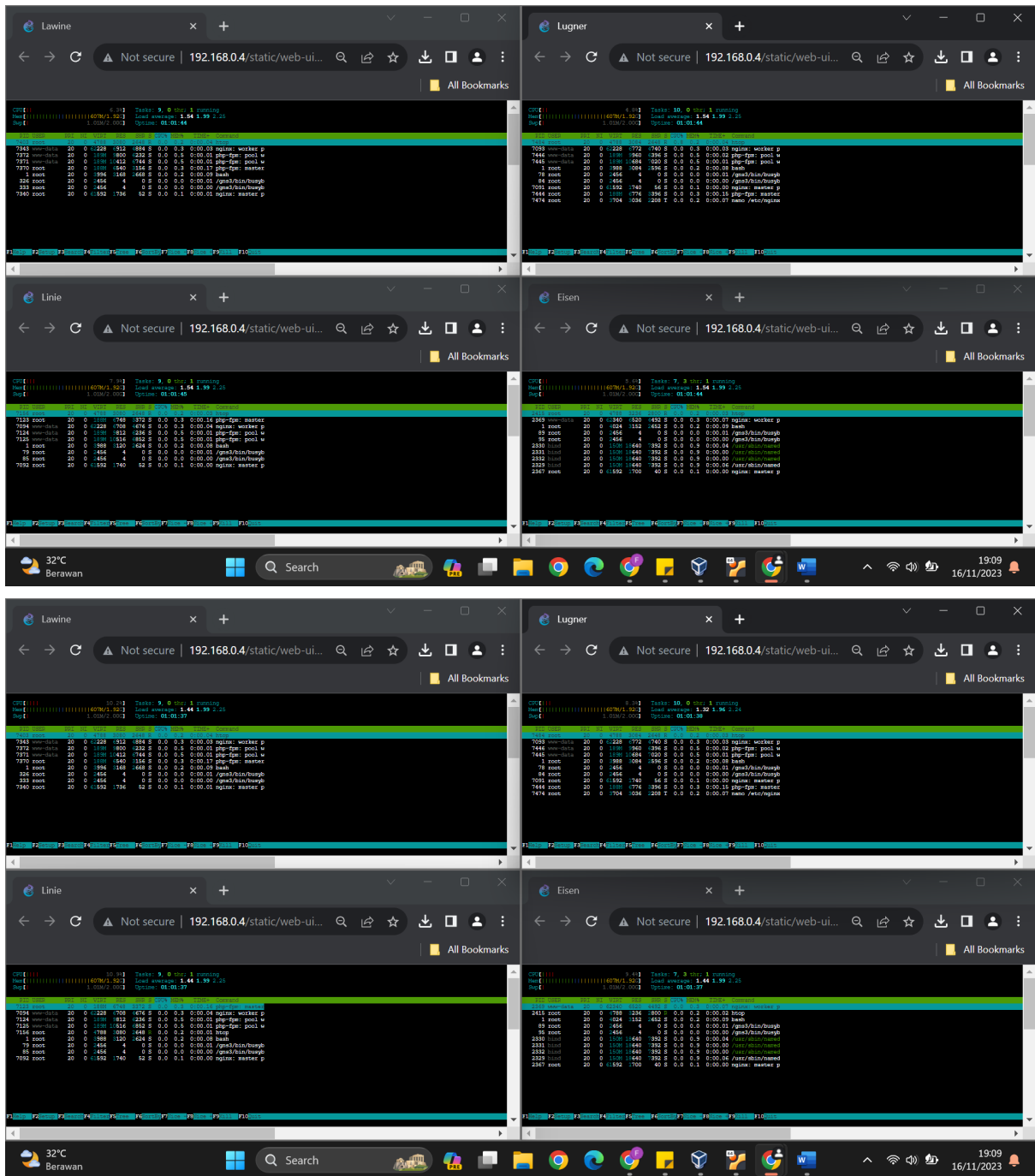
Document Path:        /
Document Length:      624 bytes

Concurrency Level:    10
Time taken for tests:  1.017 seconds
Complete requests:    200
Failed requests:      133
  (Connect: 0, Receive: 0, Length: 133, Exceptions: 0)
Total transferred:    152333 bytes
HTML transferred:     124933 bytes
Requests per second:  196.66 [#/sec] (mean)
Time per request:     50.849 [ms] (mean)
Time per request:     5.085 [ms] (mean, across all concurrent requests)
Transfer rate:        146.28 [Kbytes/sec] received


Connection Times (ms)
              min   mean[+/-sd] median   max
Connect:        0    12   6.9      12     34
Processing:      8    36  16.3      34     93
Waiting:        7    36  16.1      33     93
Total:         21    48  14.6      47     96


Percentage of the requests served within a certain time (ms)
 50%    47
 66%    51
 75%    55
 80%    57
 90%    70
 95%    77
 98%    87
 99%    94
100%   96 (longest request)

```



B. Least Connection

```

root@Sein:~# bash sein_8.sh
mkdir: cannot create directory 'benchmark': File exists
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking granz.channel.d07.com (be patient)
Completed 100 requests
Completed 200 requests
Finished 200 requests


Server Software:      nginx/1.14.2
Server Hostname:      granz.channel.d07.com
Server Port:          80

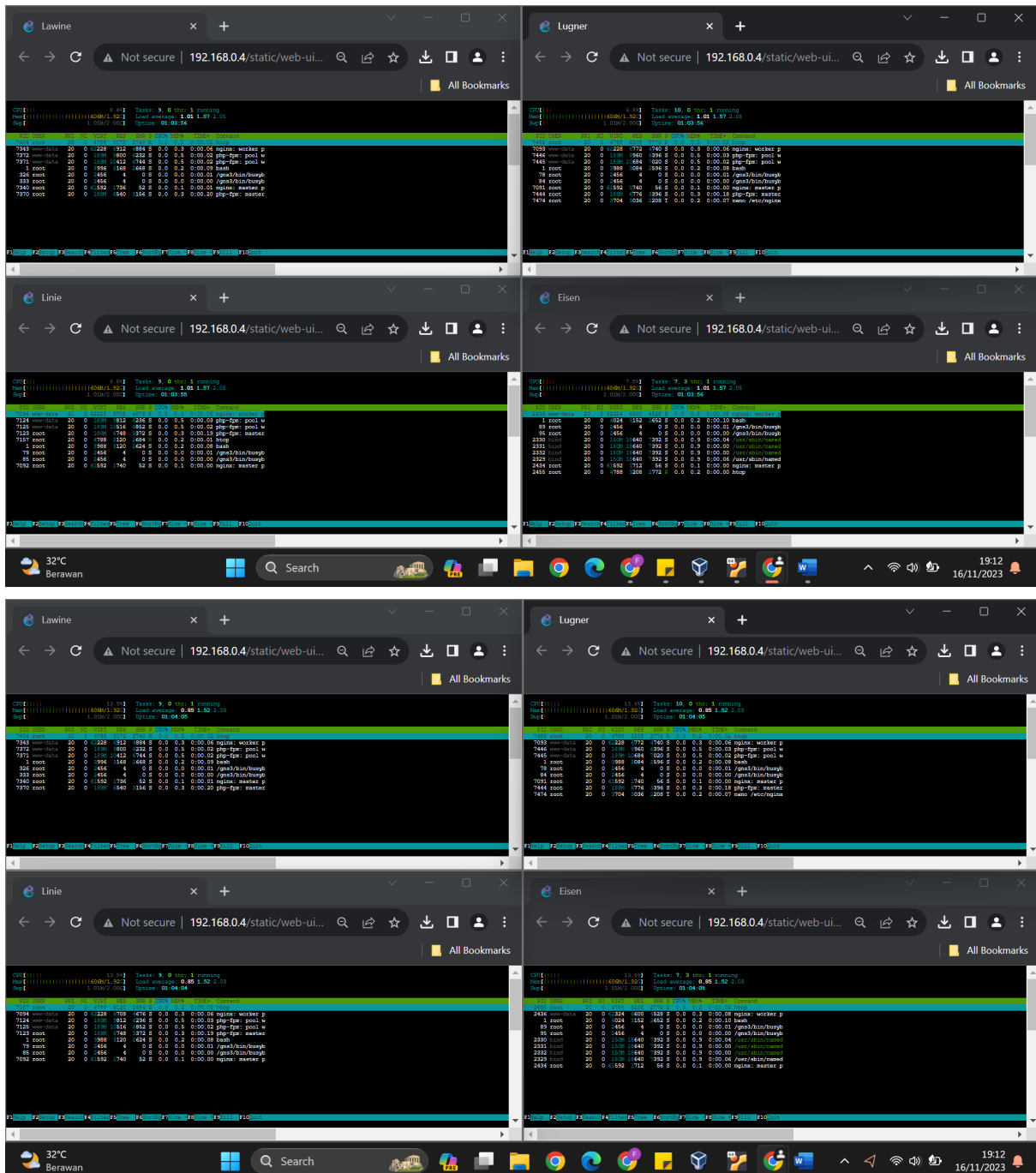

Document Path:        /
Document Length:      625 bytes


Concurrency Level:     10
Time taken for tests:  1.073 seconds
Complete requests:     200
Failed requests:        65
   (Connect: 0, Receive: 0, Length: 65, Exceptions: 0)
Total transferred:    152335 bytes
HTML transferred:     124935 bytes
Requests per second:  186.42 [#/sec] (mean)
Time per request:      53.642 [ms] (mean)
Time per request:      5.364 [ms] (mean, across all concurrent requests)
Transfer rate:         138.66 [Kbytes/sec] received


Connection Times (ms)
              min    mean[+/-sd] median    max
Connect:        0    12  12.8      9      95
Processing:      7    41  30.1     32     195
Waiting:        7    40  30.0     31     189
Total:         12    53  37.6     40     242


Percentage of the requests served within a certain time (ms)
 50%    40
 66%    44
 75%    48
 80%    56
 90%    83
 95%   155
 98%   197
 99%   228
100%   242 (longest request)
root@Sein:~#

```



C. IP Hash

```

100%    242 (longest request)
root@Sein:~# bash sein_8.sh
mkdir: cannot create directory 'benchmark': File exists
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking granz.channel.d07.com (be patient)
Completed 100 requests
Completed 200 requests
Finished 200 requests


Server Software:      nginx/1.14.2
Server Hostname:      granz.channel.d07.com
Server Port:          80

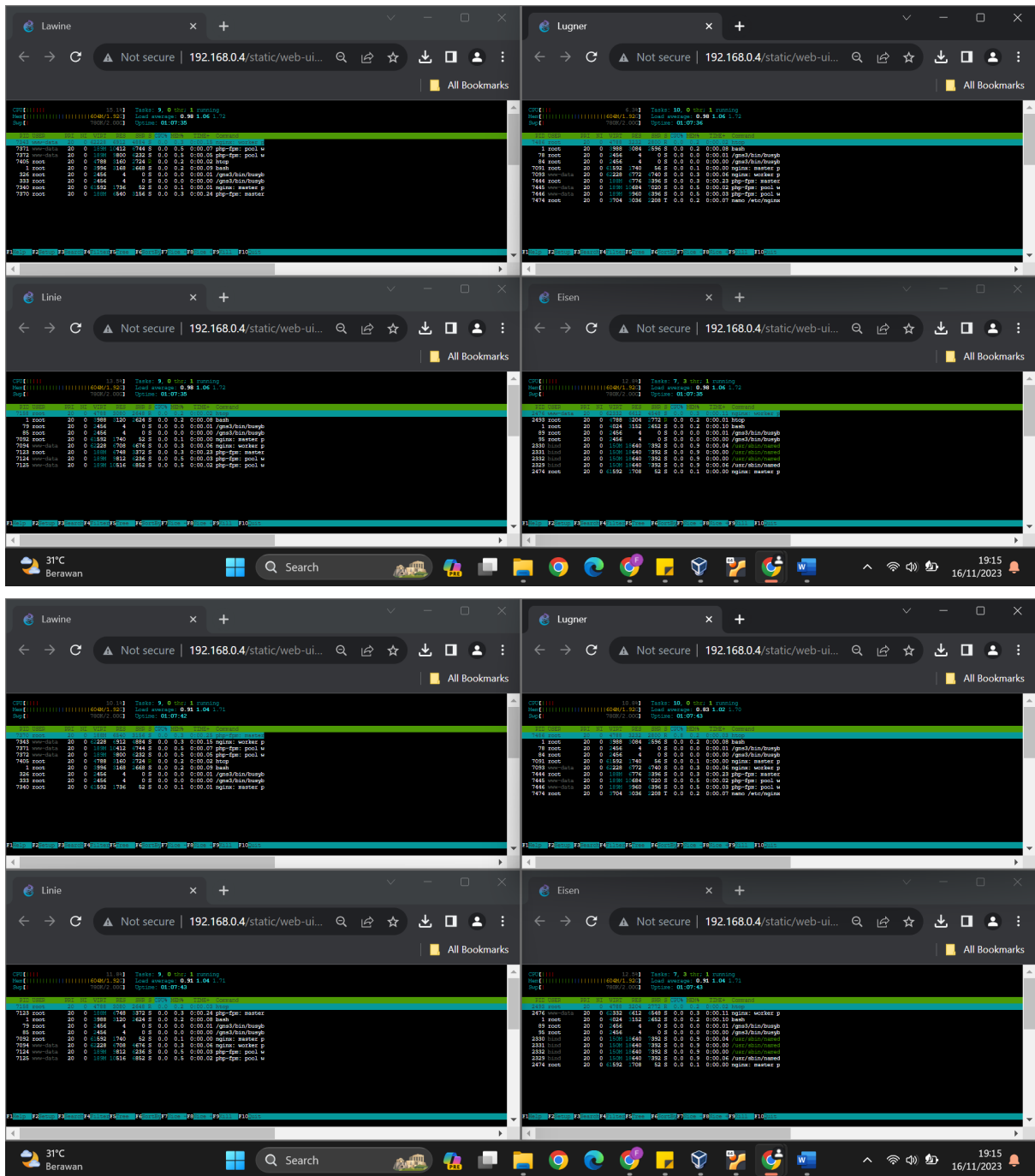
Document Path:        /
Document Length:      625 bytes

Concurrency Level:    10
Time taken for tests:  1.162 seconds
Complete requests:    200
Failed requests:       0
Total transferred:    152400 bytes
HTML transferred:     125000 bytes
Requests per second:  172.15 [#/sec] (mean)
Time per request:     58.090 [ms] (mean)
Time per request:     5.809 [ms] (mean, across all concurrent requests)
Transfer rate:        128.10 [Kbytes/sec] received


Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:      0   13  12.7      9     67
Processing:   11   44  20.7     37    130
Waiting:      11   43  20.3     37    130
Total:        15   56  27.2     48    155


Percentage of the requests served within a certain time (ms)
 50%    48
 66%    61
 75%    80
 80%    86
 90%    94
 95%    99
 98%   133
 99%   137
100%   155 (longest request)
root@Sein:~#

```



D. Generic Hash


```
Benchmarking granz.channel.d07.com (be patient)
Completed 100 requests
Completed 200 requests
Finished 200 requests
```

```

Server Software:      nginx/1.14.2
Server Hostname:      granz.channel.d07.com
Server Port:          80

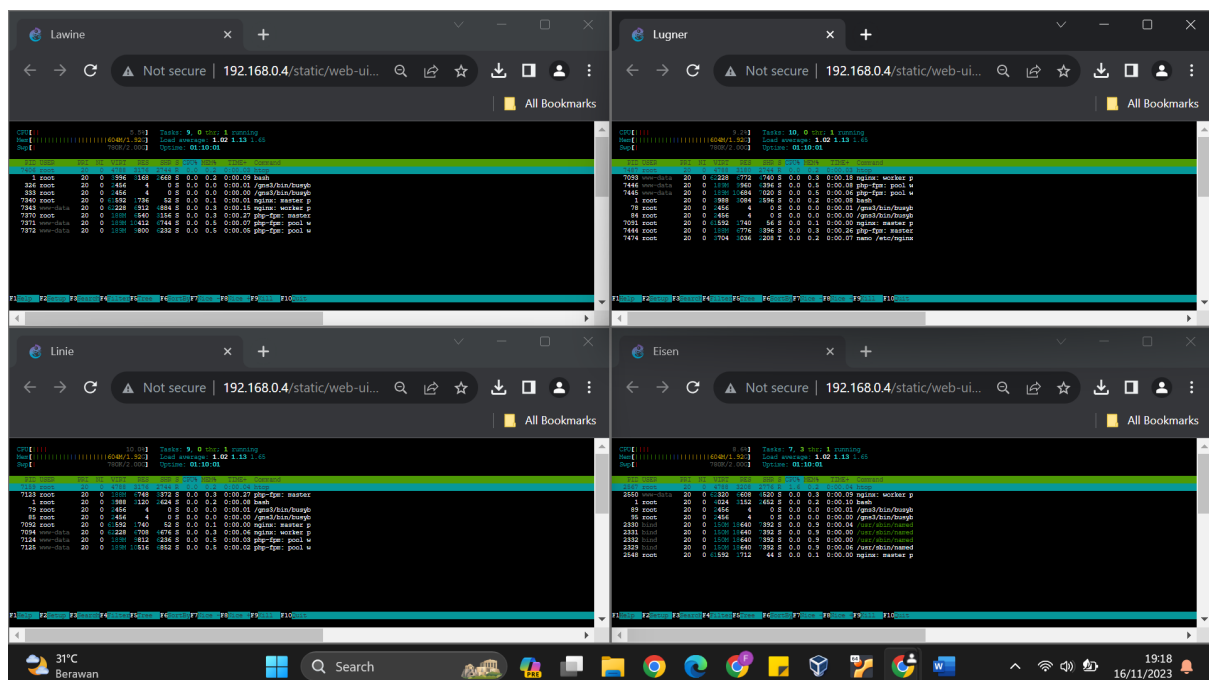
Document Path:        /
Document Length:      625 bytes

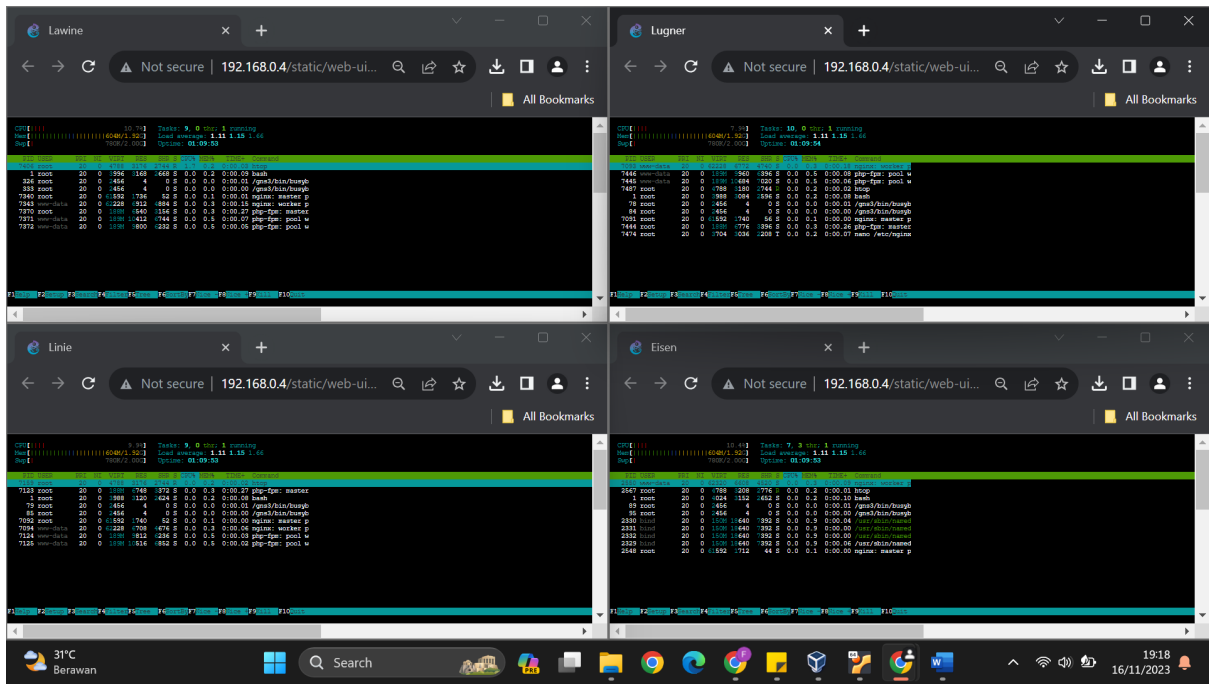
Concurrency Level:    10
Time taken for tests:  1.186 seconds
Complete requests:    200
Failed requests:       0
Total transferred:    152400 bytes
HTML transferred:     125000 bytes
Requests per second:  168.57 [#/sec] (mean)
Time per request:     59.323 [ms] (mean)
Time per request:     5.932 [ms] (mean, across all concurrent requests)
Transfer rate:        125.44 [Kbytes/sec] received

```

Connection Times (ms)				
	min	mean[+/-sd]	median	max
Connect:	0	13 10.0	11	73
Processing:	20	41 21.3	35	129
Waiting:	20	41 21.1	35	129
Total:	29	55 28.4	45	193

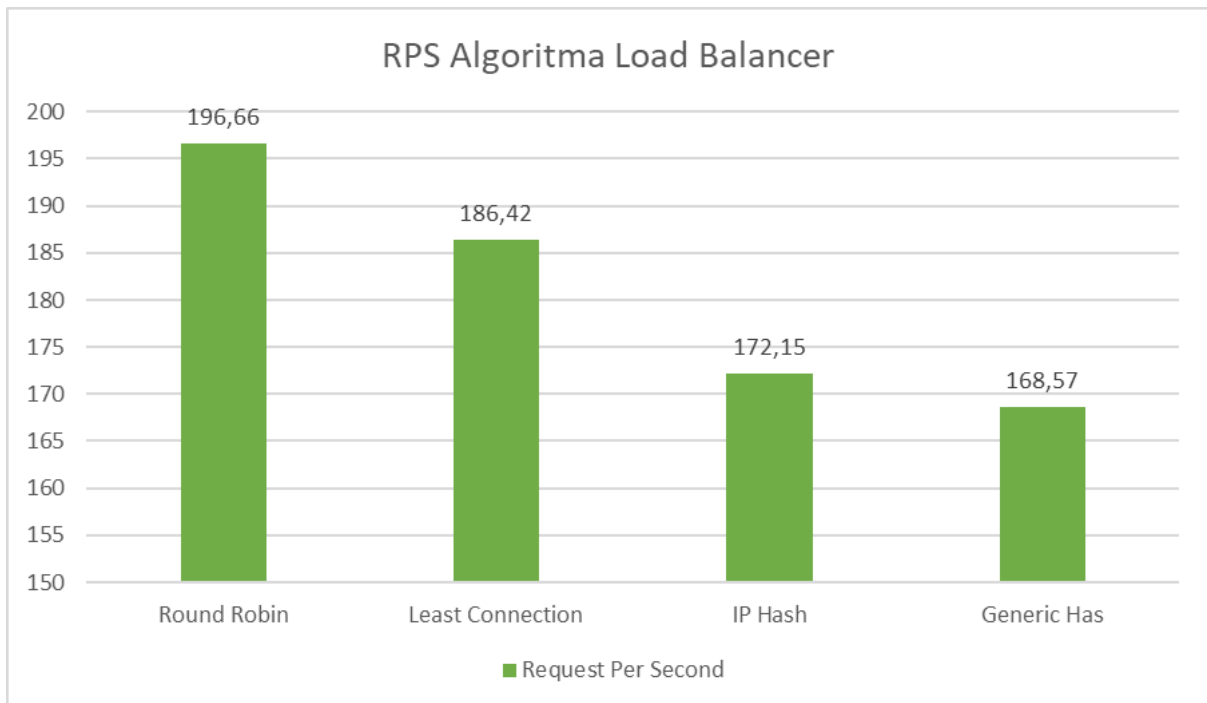
Percentage of the requests served within a certain time (ms)	
50%	45
66%	58
75%	62
80%	64
90%	71
95%	126
98%	164
99%	174
100%	193 (longest request)





C. Grafik

- A. Round Robin : 196,66
- B. Least Connection : 186,42
- C. IP Hash : 172,15
- D. Generic Hash : 168,57



D. Analisis

Dari grafik yang didapat, Round Robin memang memiliki waktu request per second paling cepat. Akan tetapi, karena ada variabel random, membuat sulit untuk memastikan pasti, algoritma yang selalu mendapatkan nilai pertama. Karena pada dasarnya tidak ada jawaban yang universal mengenai apa yang dianggap sebagai algoritme terbaik, karena efektivitas suatu algoritme sering kali bergantung pada persyaratan dan karakteristik sistem.

9. Dengan menggunakan algoritma Round Robin, lakukan testing dengan menggunakan 3 worker, 2 worker, dan 1 worker sebanyak 100 request dengan 10 request/second, kemudian tambahkan grafiknya pada grimoire. (9)

```
ab -n 100 -c 10 -g out.data http://granz.channel.d07.com/
```

A. 3 Worker

```
root@Sein:~# ab -n 100 -c 10 -g out.data http://granz.channel.d07.com/
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking granz.channel.d07.com (be patient).....done

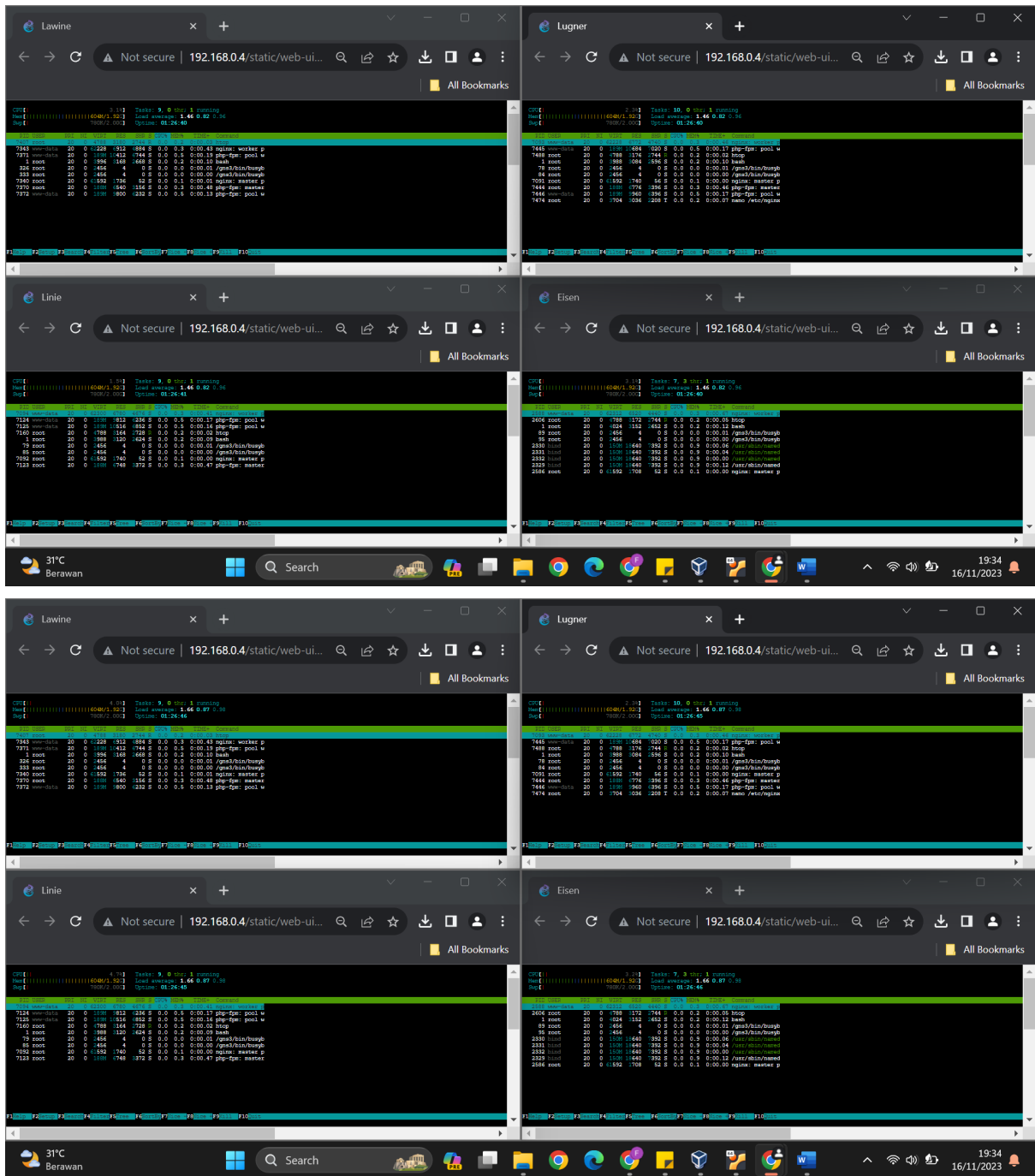

Server Software:      nginx/1.14.2
Server Hostname:      granz.channel.d07.com
Server Port:          80

Document Path:        /
Document Length:      625 bytes

Concurrency Level:    10
Time taken for tests:  0.533 seconds
Complete requests:    100
Failed requests:       33
  (Connect: 0, Receive: 0, Length: 33, Exceptions: 0)
Total transferred:    76167 bytes
HTML transferred:     62467 bytes
Requests per second:  187.69 [#/sec] (mean)
Time per request:     53.278 [ms] (mean)
Time per request:     5.328 [ms] (mean, across all concurrent requests)
Transfer rate:        139.61 [Kbytes/sec] received


Connection Times (ms)
              min  mean[+/-sd] median  max
Connect:        0   8  4.8      8    28
Processing:      3  41 25.5     35   148
Waiting:         1  40 25.5     35   148
Total:           4  50 25.8     44   159


Percentage of the requests served within a certain time (ms)
 50%    44
 66%    50
 75%    51
 80%    53
 90%    73
 95%   105
 98%   151
 99%   159
100%   159 (longest request)
```



B. 2 Worker

```

root@Sein:~# ab -n 100 -c 10 -g out.data http://granz.channel.d07.com/
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking granz.channel.d07.com (be patient).....done


Server Software:      nginx/1.14.2
Server Hostname:      granz.channel.d07.com
Server Port:          80

Document Path:        /
Document Length:      624 bytes

Concurrency Level:    10
Time taken for tests:  0.646 seconds
Complete requests:    100
Failed requests:       50
  (Connect: 0, Receive: 0, Length: 50, Exceptions: 0)
Total transferred:    76150 bytes
HTML transferred:     62450 bytes
Requests per second:  154.88 [#/sec] (mean)
Time per request:     64.568 [ms] (mean)
Time per request:     6.457 [ms] (mean, across all concurrent requests)
Transfer rate:        115.17 [Kbytes/sec] received


Connection Times (ms)
              min  mean[+/-sd] median  max
Connect:        1   12   7.0      10    28
Processing:     11  47  26.2     36   120
Waiting:        9   47  26.2     35   120
Total:         31  59  26.7     47   141


Percentage of the requests served within a certain time (ms)
 50%    47
 66%    69
 75%    78
 80%    82
 90%    98
 95%   109
 98%   141
 99%   141
100%   141 (longest request)
root@Sein:~#

```



```

100% 141 (longest request)
root@Sein:~# ab -n 100 -c 10 -g out.data http://granz.channel.d07.com/
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking granz.channel.d07.com (be patient).....done


Server Software:      nginx/1.14.2
Server Hostname:      granz.channel.d07.com
Server Port:         80

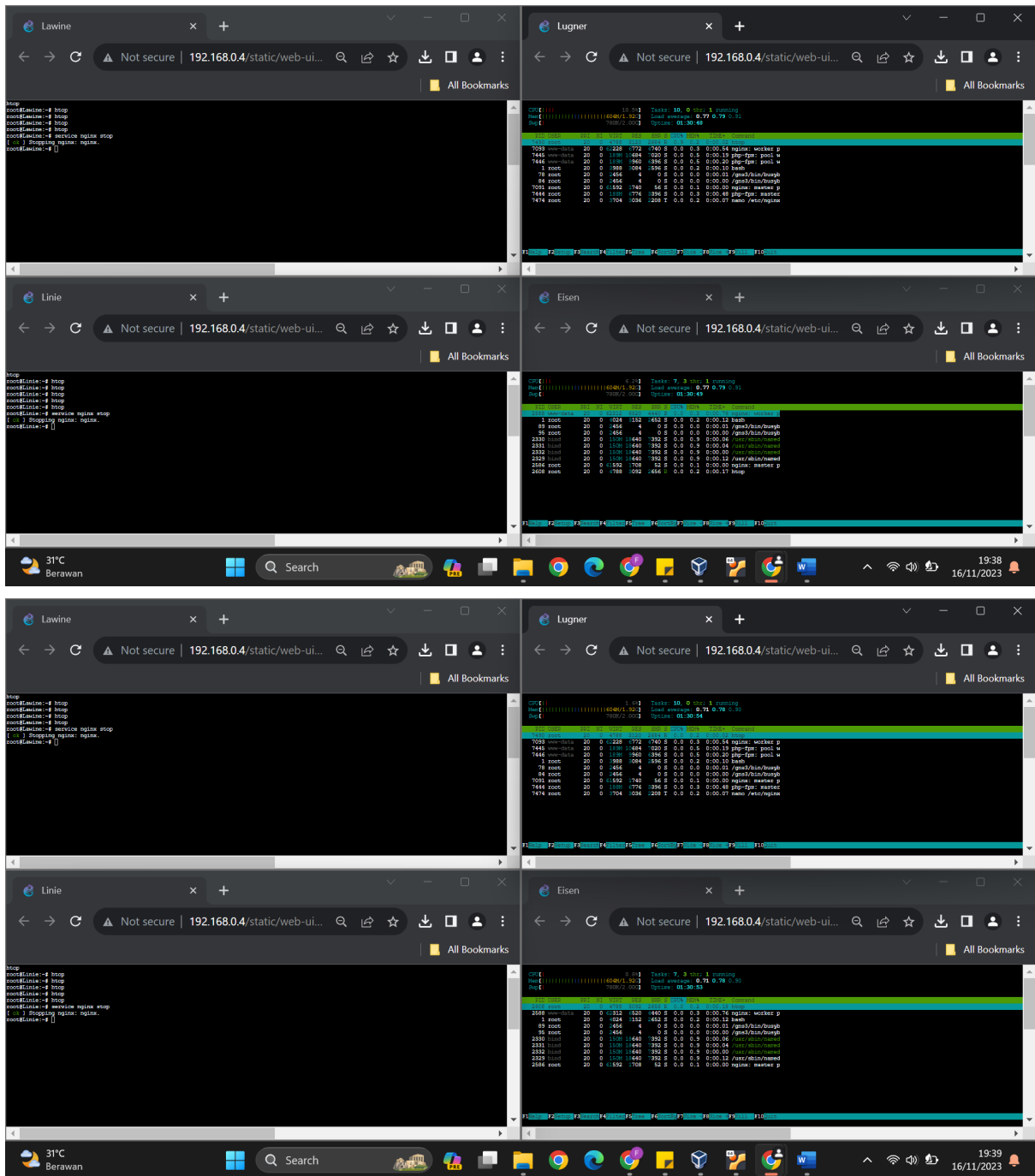
Document Path:        /
Document Length:      625 bytes

Concurrency Level:    10
Time taken for tests:  0.386 seconds
Complete requests:    100
Failed requests:      0
Total transferred:    76200 bytes
HTML transferred:     62500 bytes
Requests per second:  259.02 [#/sec] (mean)
Time per request:     38.607 [ms] (mean)
Time per request:     3.861 [ms] (mean, across all concurrent requests)
Transfer rate:        192.75 [Kbytes/sec] received


Connection Times (ms)
              min  mean[+/-sd] median  max
Connect:        0    9   3.9      9    19
Processing:      7   28   8.5     27    56
Waiting:        7   28   8.5     26    56
Total:         14   37   9.6     34    69

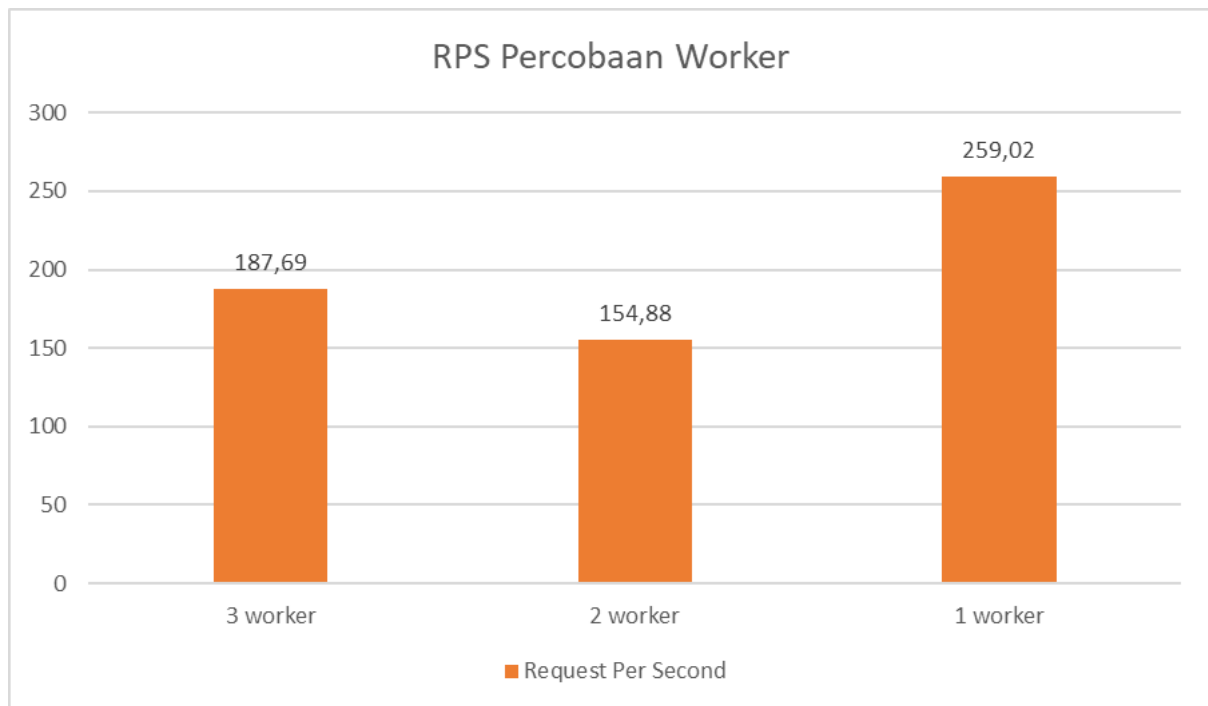

Percentage of the requests served within a certain time (ms)
 50%    34
 66%    39
 75%    42
 80%    45
 90%    51
 95%    57
 98%    59
 99%    69
100%    69 (longest request)
root@Sein:~#

```



D. Grafik

1. 3 Worker : 187,69
2. 2 Worker : 154,88
3. 1 Worker : 259,02



15. - 17. Riegel Channel memiliki beberapa endpoint yang harus ditesting sebanyak 100 request dengan 10 request/second. Tambahkan response dan hasil testing pada grimoire.

a	ab -n 100 -c 10 -p register.json -T application/json http://10.25.4.1/api/auth/register
b	ab -n 100 -c 10 -p login.json -T application/json http://10.25.4.1/api/auth/login
c	ab -n 100 -c 10 -H "Authorization: Bearer \$tokenTest" http://10.25.4.1/api/me

a. POST /auth/register **(15)**

```

root@Sein:~# ab -n 100 -c 10 -p register.json -T application/json http://10.25.4.1/api/auth/register
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking 10.25.4.1 (be patient).....done

Server Software:      nginx/1.14.2
Server Hostname:      10.25.4.1
Server Port:          80

Document Path:        /api/auth/register
Document Length:      6619 bytes

Concurrency Level:    10
Time taken for tests:  5.258 seconds
Complete requests:    100
Failed requests:       0
Non-2xx responses:    100
Total transferred:    696485 bytes
Total body sent:      28400
HTML transferred:     661900 bytes
Requests per second:  19.02 [#/sec] (mean)
Time per request:     525.807 [ms] (mean)
Time per request:     52.581 [ms] (mean, across all concurrent requests)
Transfer rate:        129.36 [Kbytes/sec] received
                     5.27 kb/s sent
                     134.63 kb/s total

Connection Times (ms)
              min  mean[+/-sd] median  max
Connect:      0    1  2.4      0    16
Processing:   154  500 161.5    475   933
Waiting:      137  465 159.7    438   894
Total:        156  501 161.4    475   933

Percentage of the requests served within a certain time (ms)
 50%    475
 66%    509
 75%    580
 80%    626
 90%    760
 95%    844
 98%    899
 99%    933
100%    933 (longest request)
root@Sein:~#

```

b. POST /auth/login (16)

```

pi/auth/loot@Sein:~$ ab -n 100 -ot@Sein:~$ ab -n 100 -c 10 -p loginon http://10.25.4.1/apiot
ication/json http://10.25.4.1/appplication/json http://10.25.4.1/api/a0.25.4.1/api
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>n/json http://10.25.4.1/ap
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking 10.25.4.1 (be patient).....done

Server Software:      nginx/1.14.2
Server Hostname:      10.25.4.1
Server Port:          80

Document Path:        /api/auth/login
Document Length:       48 bytes

Concurrency Level:    10
Time taken for tests:  2.457 seconds
Complete requests:    100
Failed requests:       40
  (Connect: 0, Receive: 0, Length: 40, Exceptions: 0)
Non-2xx responses:    100
Total transferred:    298989 bytes
Total body sent:      21400
HTML transferred:     267640 bytes
Requests per second:  40.69 [#/sec] (mean)
Time per request:     245.732 [ms] (mean)
Time per request:     24.573 [ms] (mean, across all concurrent requests)
Transfer rate:        118.82 [Kbytes/sec] received
                      8.50 kb/s sent
                      127.33 kb/s total

Connection Times (ms)
      min  mean[+/-sd] median   max
Connect:    0     1   1.2      0     8
Processing: 76    230  47.1    233   335
Waiting:    75    224  48.1    229   335
Total:      77    231  46.7    233   336

Percentage of the requests served within a certain time (ms)
 50%    233
 66%    245
 75%    261
 80%    269
 90%    285
 95%    300
 98%    326
 99%    336
100%    336 (longest request)
root@Sein:~$ █

```

c. GET /me (17)

```

4.1/api/me~$ ab -n 100 -c 10 -H "Authorization: Bearer $tokenTest" http://10.25.4
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking 10.25.4.1 (be patient).....done

Server Software:      nginx/1.14.2
Server Hostname:      10.25.4.1
Server Port:          80

Document Path:        /api/me
Document Length:      42 bytes

Concurrency Level:    10
Time taken for tests:  2.500 seconds
Complete requests:    100
Failed requests:      40
  (Connect: 0, Receive: 0, Length: 40, Exceptions: 0)
Non-2xx responses:    100
Total transferred:    298629 bytes
HTML transferred:     267280 bytes
Requests per second:  40.00 [#/sec] (mean)
Time per request:     250.029 [ms] (mean)
Time per request:     25.003 [ms] (mean, across all concurrent requests)
Transfer rate:        116.64 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    0   0.4      0      2
Processing:     76  233  53.2    228    427
Waiting:        76  228  53.4    226    427
Total:          78  233  53.0    228    427

Percentage of the requests served within a certain time (ms)
 50%    228
 66%    243
 75%    263
 80%    272
 90%    294
 95%    311
 98%    415
 99%    427
100%    427 (longest request)
root@Sein:~#

```

19. Untuk meningkatkan performa dari Worker, coba implementasikan PHP-FPM pada Frieren, Flamme, dan Fern. Untuk testing kinerja naikan

- pm.max_children
- pm.start_servers
- pm.min_spare_servers
- pm.max_spare_servers

sebanyak tiga percobaan dan lakukan testing sebanyak 100 request dengan 10 request/second kemudian berikan hasil analisisnya pada Grimoire.(19)

1	ab -n 100 -c 10 -p login.json -T application/json http://10.25.4.1/api/auth/login
2	ab -n 100 -c 10 -p login.json -T application/json http://10.25.4.2/api/auth/login
3	ab -n 100 -c 10 -p login.json -T application/json http://10.25.4.3/api/auth/login

1. Percobaan pertama

```
pm = dynamic
pm.max_children = 75
pm.start_servers = 10
pm.min_spare_servers = 5
pm.max_spare_servers = 20
pm.process_idle_timeout = 10s
```

```
api/auth/loginb -n 100 -c 10 -p login.json -T application/json http://10.25.4.1/a
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/
```

Benchmarking 10.25.4.1 (be patient).....done

```
Server Software:      nginx/1.14.2
Server Hostname:      10.25.4.1
Server Port:          80

Document Path:        /api/auth/login
Document Length:       48 bytes

Concurrency Level:     10
Time taken for tests:   5.690 seconds
Complete requests:     100
Failed requests:        37
  (Connect: 0, Receive: 0, Length: 37, Exceptions: 0)
Non-2xx responses:     100
Total transferred:     279115 bytes
Total body sent:       21400
HTML transferred:      247927 bytes
Requests per second:   17.57 [#/sec] (mean)
Time per request:      569.041 [ms] (mean)
Time per request:      56.904 [ms] (mean, across all concurrent requests)
Transfer rate:         47.90 [Kbytes/sec] received
                      3.67 kb/s sent
                      51.57 kb/s total
```

```
Connection Times (ms)
              min  mean[+/-sd] median  max
Connect:        0    1   3.1      0    20
Processing:    118  446 228.3    396  1314
Waiting:       116  435 231.4    383  1304
Total:         118  447 229.1    397  1316
```

```
Percentage of the requests served within a certain time (ms)
 50%    397
 66%    439
 75%    469
 80%    498
 90%    853
 95%    953
 98%   1060
 99%   1316
100%   1316 (longest request)
```

2. Percobaan Kedua

```
pm = dynamic
pm.max_children = 35
pm.start_servers = 5
pm.min_spare_servers = 3
pm.max_spare_servers = 10
pm.process_idle_timeout = 10s
```

```

api/auth/loginb -n 100 -c 10 -p login.json -T application/json http://10.25.4.2/a
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
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Benchmarking 10.25.4.2 (be patient).....done

Server Software:      nginx/1.14.2
Server Hostname:      10.25.4.2
Server Port:          80

Document Path:        /api/auth/login
Document Length:       48 bytes

Concurrency Level:     10
Time taken for tests:   4.061 seconds
Complete requests:      100
Failed requests:        39
  (Connect: 0, Receive: 0, Length: 39, Exceptions: 0)
Non-2xx responses:      100
Total transferred:      292365 bytes
Total body sent:        21400
HTML transferred:       261069 bytes
Requests per second:    24.62 [#/sec] (mean)
Time per request:       406.098 [ms] (mean)
Time per request:       40.610 [ms] (mean, across all concurrent requests)
Transfer rate:          70.31 [Kbytes/sec] received
                       5.15 kb/s sent
                       75.45 kb/s total

Connection Times (ms)
              min      mean[+/-sd] median    max
Connect:        0        1   2.1      0      13
Processing:    139     318 137.4     281    909
Waiting:        99     304 138.7     276    899
Total:         139     319 138.1     282    914

Percentage of the requests served within a certain time (ms)
 50%    282
 66%    312
 75%    334
 80%    365
 90%    496
 95%    659
 98%    805
 99%    914
100%    914 (longest request)
root@Sein:~# 

```

3. Percobaan ketiga

```

pm = dynamic
pm.max_children = 17
pm.start_servers = 7
pm.min_spare_servers = 5
pm.max_spare_servers = 13
pm.process_idle_timeout = 10s

```

```

api/auth/loginb -n 100 -c 10 -p login.json -T application/json http://10.25.4.3/a
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Benchmarking 10.25.4.3 (be patient).....done

Server Software:      nginx/1.14.2
Server Hostname:      10.25.4.3
Server Port:          80

Document Path:        /api/auth/login
Document Length:       48 bytes

Concurrency Level:     10
Time taken for tests:   4.296 seconds
Complete requests:     100
Failed requests:        40
  (Connect: 0, Receive: 0, Length: 40, Exceptions: 0)
Non-2xx responses:     100
Total transferred:     298988 bytes
Total body sent:       21400
HTML transferred:      267640 bytes
Requests per second:    23.28 [#/sec] (mean)
Time per request:       429.606 [ms] (mean)
Time per request:       42.961 [ms] (mean, across all concurrent requests)
Transfer rate:          67.96 [Kbytes/sec] received
                       4.86 kb/s sent
                       72.83 kb/s total

Connection Times (ms)
              min  mean[+/-sd] median  max
Connect:        0    2   4.5      0    28
Processing:    127  338 149.3    298   909
Waiting:        87  324 154.8    281   899
Total:         127  340 149.2    298   911

Percentage of the requests served within a certain time (ms)
 50%    298
 66%    339
 75%    405
 80%    453
 90%    563
 95%    659
 98%    845
 99%    911
100%    911 (longest request)

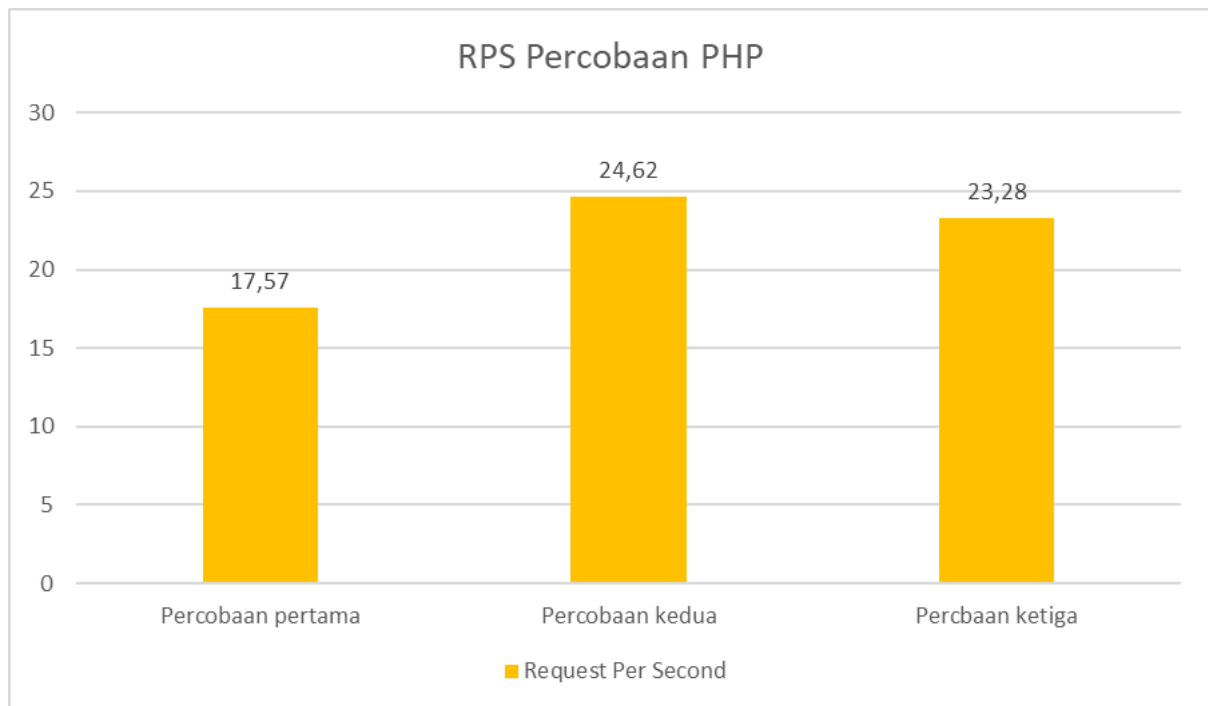
```

B. Grafik

Percobaa pertama:17,57

Percobaan kedua: 24,62

Percobaan ketiga: 23,28



20. Nampaknya hanya menggunakan PHP-FPM tidak cukup untuk meningkatkan performa dari worker maka implementasikan Least-Conn pada Eisen. Untuk testing kinerja dari worker tersebut dilakukan sebanyak 100 request dengan 10 request/second. **(20)**

```
ab -n 100 -c 10 -p login.json -T application/json http://riegel.canyon.d07.com/api/auth/login
```



```
yon.d07.com/api/auth/login10 -p login.json -T application/json http://riegel.cany
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/
```

```
Benchmarking riegel.canyon.d07.com (be patient).....done
```

```
Server Software:      nginx/1.14.2
Server Hostname:      riegel.canyon.d07.com
Server Port:          80

Document Path:        /api/auth/login
Document Length:      48 bytes

Concurrency Level:    10
Time taken for tests:  3.866 seconds
Complete requests:    100
Failed requests:       0
Non-2xx responses:    100
Total transferred:    34000 bytes
Total body sent:      22600
HTML transferred:     4800 bytes
Requests per second:  25.87 [#/sec] (mean)
Time per request:     386.552 [ms] (mean)
Time per request:     38.655 [ms] (mean, across all concurrent requests)
Transfer rate:        8.59 [Kbytes/sec] received
                      5.71 kb/s sent
                      14.30 kb/s total
```

Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	1 1.9	0	9
Processing:	150	366 133.5	335	748
Waiting:	138	365 134.1	334	748
Total:	151	367 134.0	335	755

Percentage of the requests served within a certain time (ms)

50%	335
66%	410
75%	445
80%	479
90%	562
95%	637
98%	700
99%	755
100%	755 (longest request)

```
root@Sein:~#
```