

# GRIMOIRE

## Kelompok\_E29

### I. Hasil testing

#### a. Round Robin

```
root@Sein:~# bash testSoal8.sh
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.e29.com (be patient)
Completed 100 requests
Completed 200 requests
Finished 200 requests

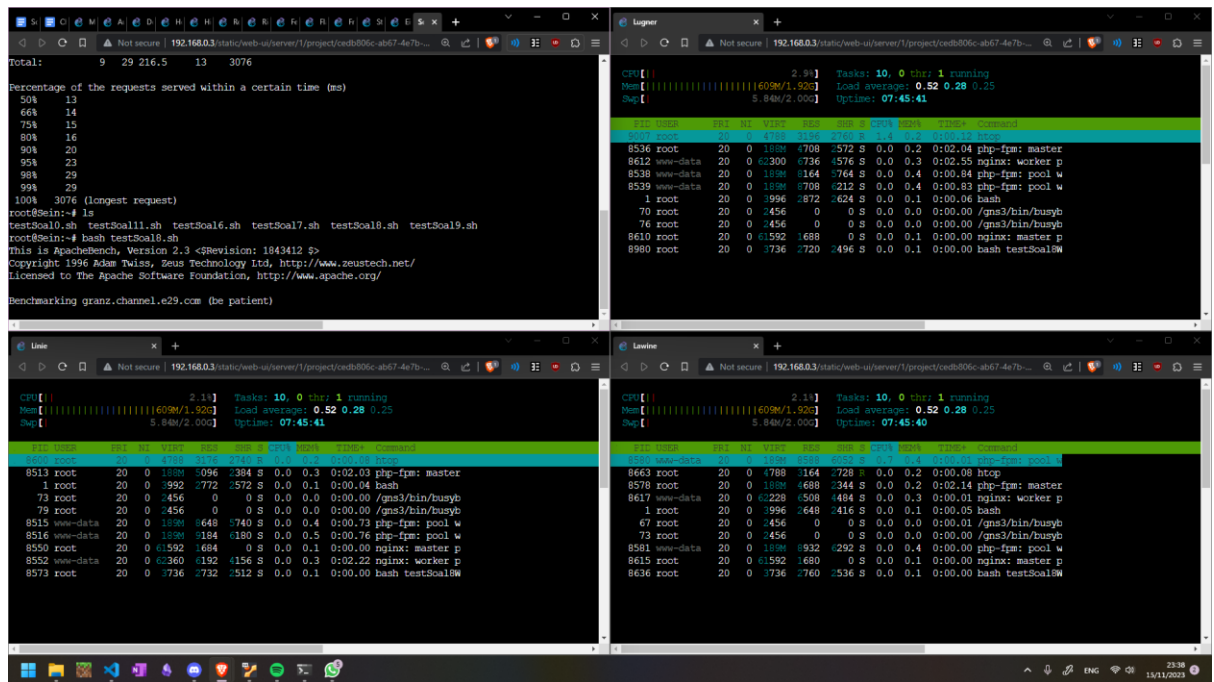
Server Software:      nginx/1.14.2
Server Hostname:      granz.channel.e29.com
Server Port:          80

Document Path:        /
Document Length:      606 bytes

Concurrency Level:    10
Time taken for tests:  0.280 seconds
Complete requests:    200
Failed requests:       100
  (Connect: 0, Receive: 0, Length: 100, Exceptions: 0)
Total transferred:    148500 bytes
HTML transferred:     121100 bytes
Requests per second:  713.24 [#/sec] (mean)
Time per request:     14.021 [ms] (mean)
Time per request:     1.402 [ms] (mean, across all concurrent requests)
Transfer rate:        517.17 [Kbytes/sec] received

Connection Times (ms)
      min   mean[+/-sd] median   max
Connect:    0     3   1.5      2    10
Processing:  1    11   2.1     11    17
Waiting:    1    11   2.1     11    16
Total:      1    14   2.6     13    22

Percentage of the requests served within a certain time (ms)
 50%    13
 66%    14
 75%    15
 80%    16
 90%    17
 95%    18
 98%    21
 99%    21
100%    22 (longest request)
```



## b. Weighted Round Robin

```
root@Sein:~# bash testSoal8.sh
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Benchmarking granz.channel.e29.com (be patient)
Completed 100 requests
Completed 200 requests
Finished 200 requests

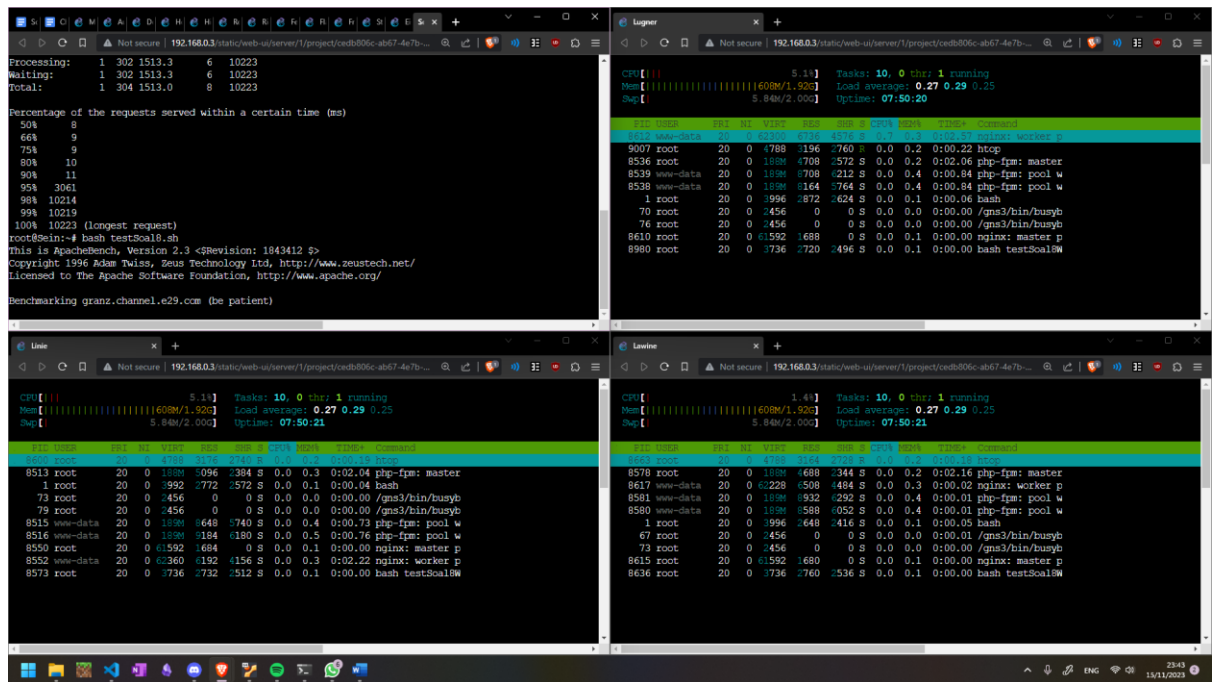

Server Software:      nginx/1.14.2
Server Hostname:      granz.channel.e29.com
Server Port:          80


Document Path:        /
Document Length:      605 bytes


Concurrency Level:    10
Time taken for tests:  0.277 seconds
Complete requests:    200
Failed requests:      133
    (Connect: 0, Receive: 0, Length: 133, Exceptions: 0)
Total transferred:    148533 bytes
HTML transferred:     121133 bytes
Requests per second:  721.14 [#/sec] (mean)
Time per request:     13.867 [ms] (mean)
Time per request:     1.387 [ms] (mean, across all concurrent requests)
Transfer rate:        523.02 [Kbytes/sec] received


Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    3   1.4      3      7
Processing:      1   10   2.0     10     17
Waiting:         1   10   1.9     10     17
Total:          1   14   2.4     14     20


Percentage of the requests served within a certain time (ms)
 50%    14
 66%    14
 75%    15
 80%    16
 90%    16
 95%    17
 98%    18
 99%    20
100%    20 (longest request)
```



c. Least Connection

```
root@Sein:~# bash testSoal8.sh
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Benchmarking granz.channel.e29.com (be patient)
Completed 100 requests
Completed 200 requests
Finished 200 requests

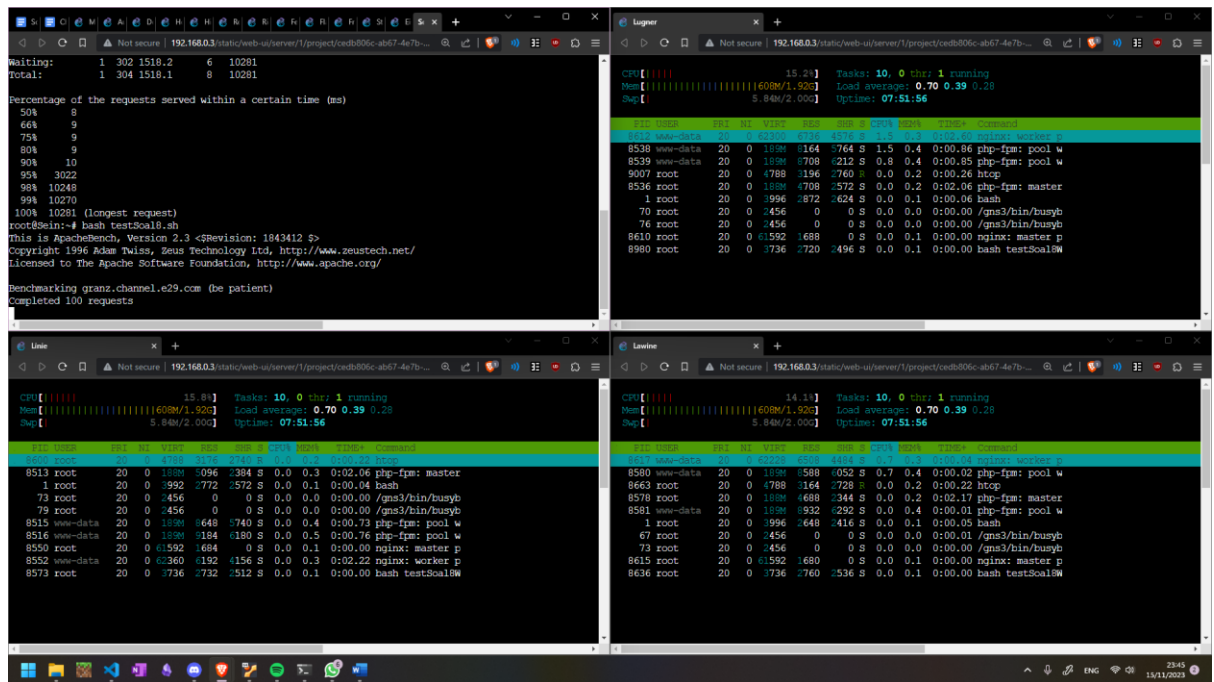

Server Software:      nginx/1.14.2
Server Hostname:      granz.channel.e29.com
Server Port:          80


Document Path:        /
Document Length:      605 bytes


Concurrency Level:    10
Time taken for tests:  0.281 seconds
Complete requests:    200
Failed requests:      100
    (Connect: 0, Receive: 0, Length: 100, Exceptions: 0)
Total transferred:    148500 bytes
HTML transferred:     121100 bytes
Requests per second:  711.15 [#/sec] (mean)
Time per request:     14.062 [ms] (mean)
Time per request:     1.406 [ms] (mean, across all concurrent requests)
Transfer rate:        515.66 [Kbytes/sec] received


Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    3   1.4      3     16
Processing:      1   11   2.9     10     21
Waiting:         1   11   2.9     10     21
Total:          1   14   3.1     13     26


Percentage of the requests served within a certain time (ms)
 50%    13
 66%    14
 75%    15
 80%    16
 90%    17
 95%    19
 98%    23
 99%    26
100%    26 (longest request)
```



#### d. IP Hash

```
root@Sein:~# bash testSoal8.sh
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
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Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking granz.channel.e29.com (be patient)
Completed 100 requests
Completed 200 requests
Finished 200 requests

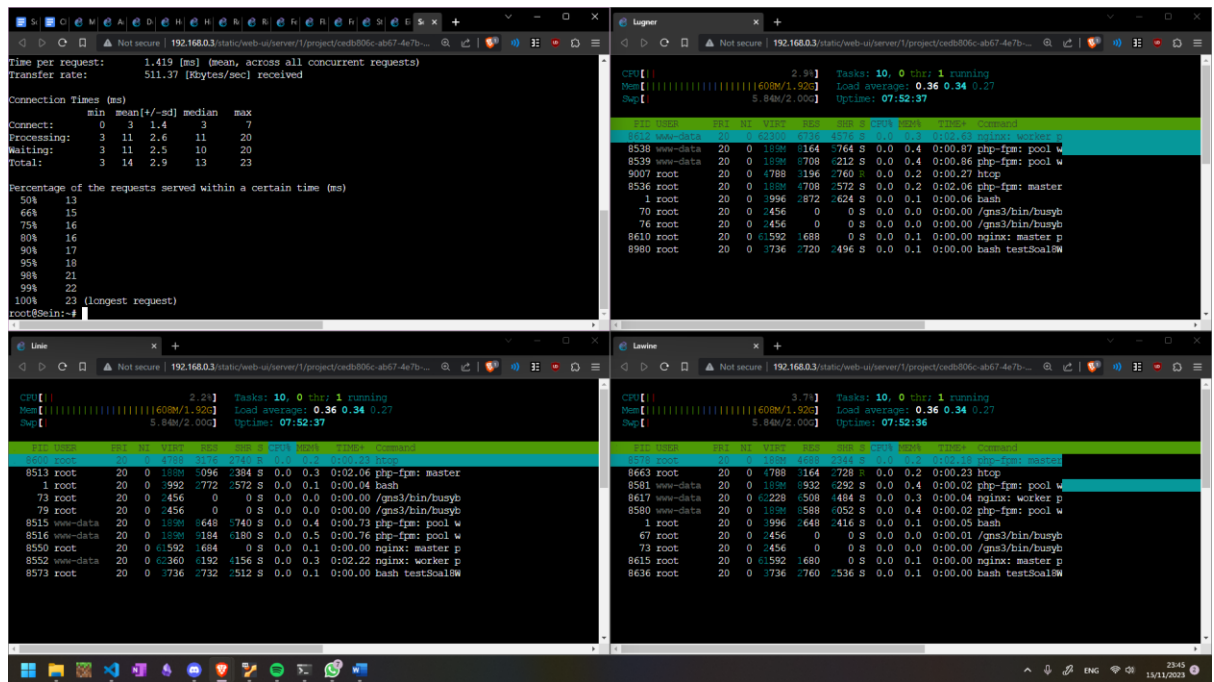

Server Software:      nginx/1.14.2
Server Hostname:      granz.channel.e29.com
Server Port:          80


Document Path:        /
Document Length:      606 bytes


Concurrency Level:    10
Time taken for tests:  0.257 seconds
Complete requests:    200
Failed requests:       0
Total transferred:    148600 bytes
HTML transferred:     121200 bytes
Requests per second:  778.72 [#/sec] (mean)
Time per request:     12.842 [ms] (mean)
Time per request:     1.284 [ms] (mean, across all concurrent requests)
Transfer rate:        565.03 [Kbytes/sec] received


Connection Times (ms)
              min    mean[+/-sd] median    max
Connect:        0      2   1.6      2      9
Processing:      2     10   2.5     11     17
Waiting:         1     10   2.4     10     17
Total:           2     13   2.3     12     19


Percentage of the requests served within a certain time (ms)
 50%    12
 66%    13
 75%    13
 80%    14
 90%    16
 95%    17
 98%    18
 99%    19
100%    19 (longest request)
```





#### e. Generic Hash

```
root@Sein:~# bash testSoal8.sh
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Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking granz.channel.e29.com (be patient)
Completed 100 requests
Completed 200 requests
Finished 200 requests

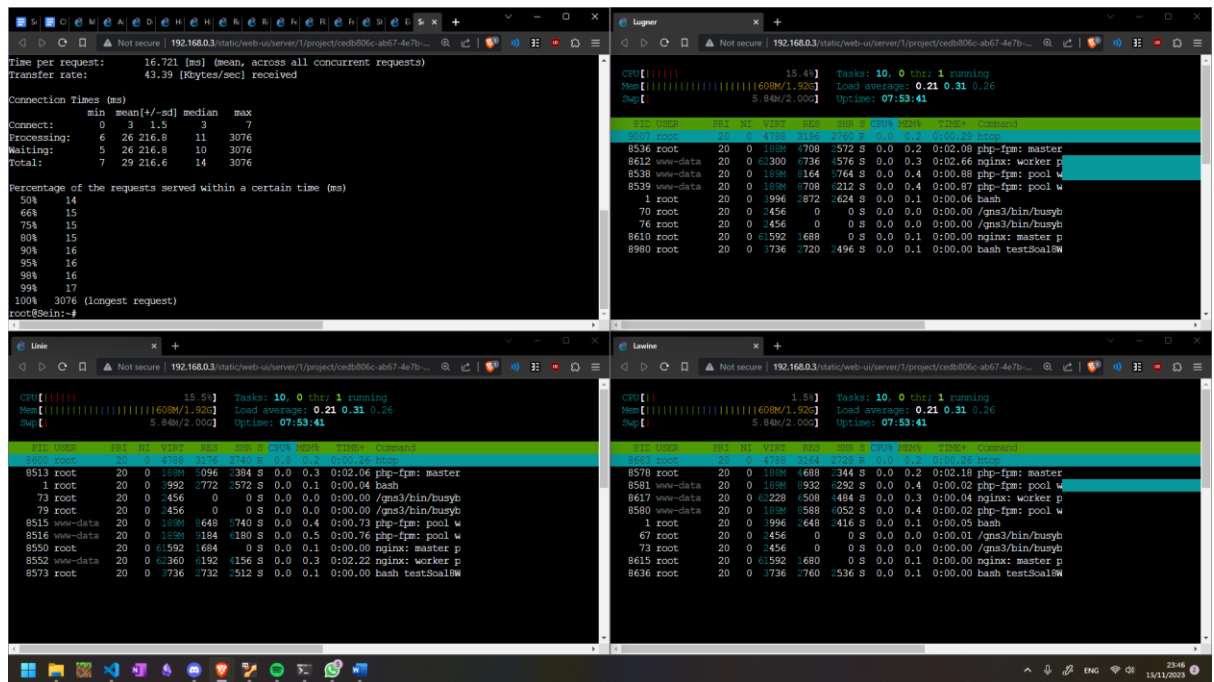

Server Software:      nginx/1.14.2
Server Hostname:      granz.channel.e29.com
Server Port:          80


Document Path:        /
Document Length:      605 bytes

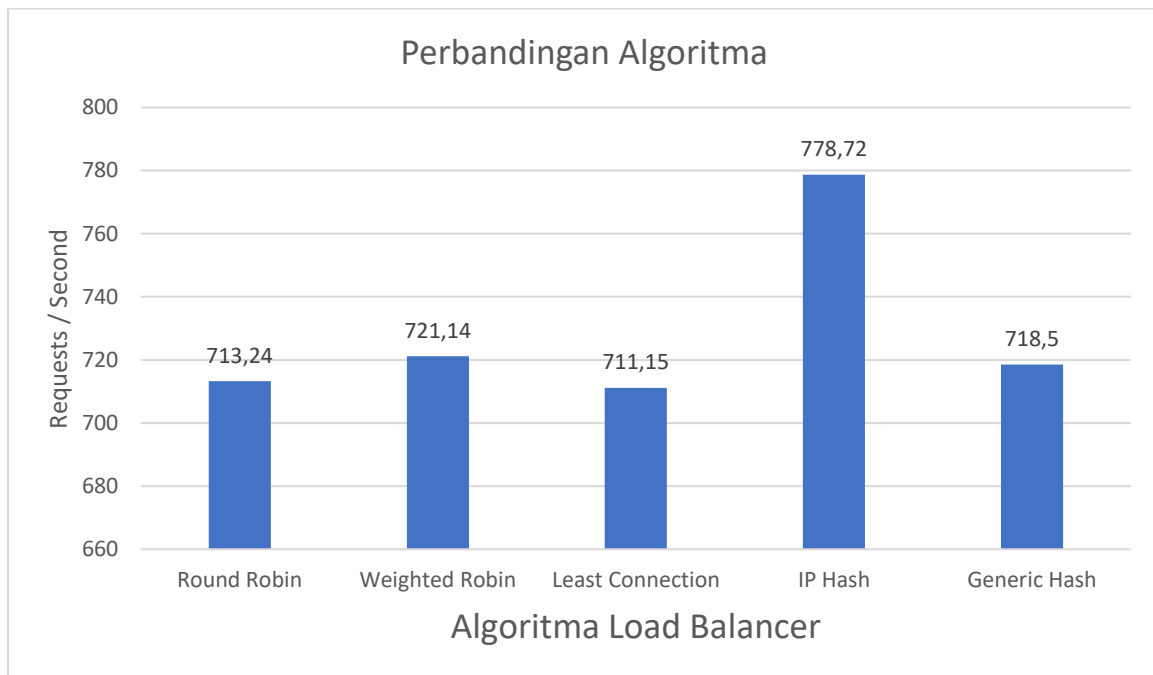

Concurrency Level:    10
Time taken for tests:  0.278 seconds
Complete requests:    200
Failed requests:       0
Total transferred:    148400 bytes
HTML transferred:     121000 bytes
Requests per second:  718.50 [#/sec] (mean)
Time per request:     13.918 [ms] (mean)
Time per request:     1.392 [ms] (mean, across all concurrent requests)
Transfer rate:        520.63 [Kbytes/sec] received

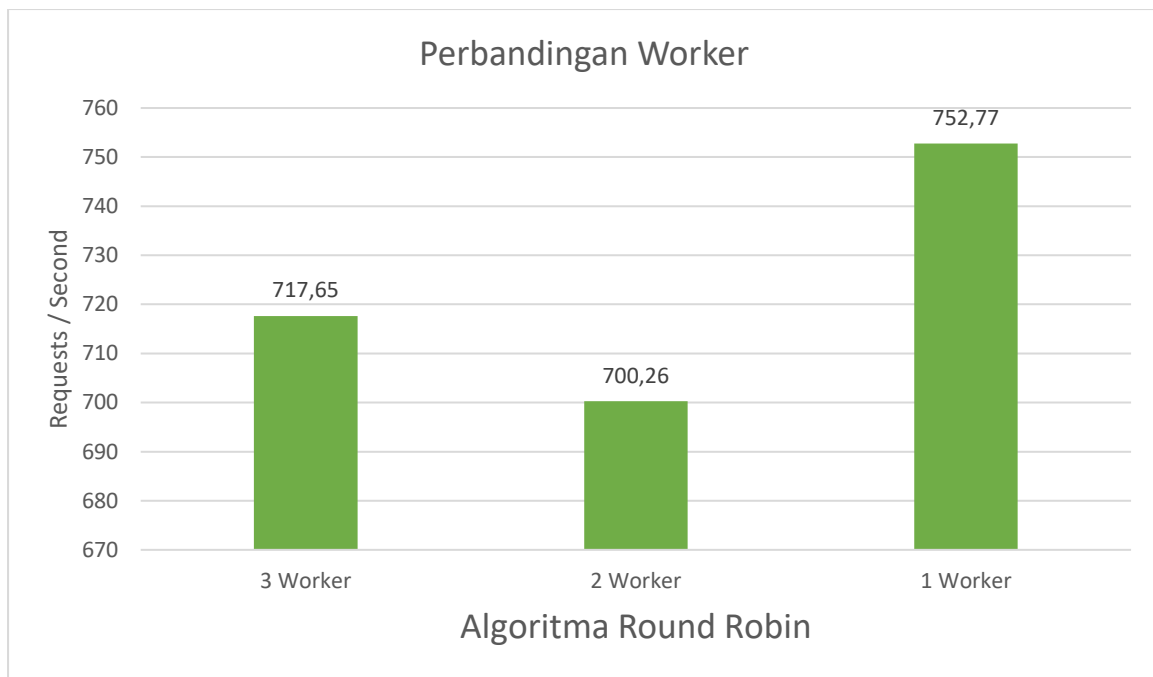

Connection Times (ms)
              min   mean[+/-sd] median   max
Connect:        0    3   1.5      3     13
Processing:     1   11   3.3     10     23
Waiting:        1   11   3.3     10     23
Total:          1   14   3.6     13     27


Percentage of the requests served within a certain time (ms)
 50%    13
 66%    14
 75%    15
 80%    16
 90%    18
 95%    22
 98%    24
 99%    26
100%    27 (longest request)
```



## II. Grafik





### III. Analisis

Dalam hasil pengujian ini algoritma yang paling baik adalah **IP Hash** dengan hasil **778,72** requests/second. Algoritma IP Hash menggunakan alamat IP client sebagai faktor untuk menentukan server yang akan menerima permintaan. Setiap client akan terhubung ke server yang sama selama alamat IP-nya tetap tidak berubah.

Cara kerja algoritma ini memberikan konsistensi dalam koneksi dari client ke server, yang berguna dalam situasi di mana koneksi memerlukan sesi yang berkelanjutan atau ketika data yang terkait dengan koneksi tersebut disimpan di server tertentu. IP Hash menghasilkan performa yang maksimal dengan memetakan alamat IP client ke server yang tepat.

Adanya perubahan dan variasi angka dalam hasil pengujian ini yang disebabkan oleh banyak faktor

### IV. Testing API (Soal 15-17)

### a. POST /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 10.51.4.1 (be patient).....done


Server Software:      nginx/1.14.2
Server Hostname:      10.51.4.1
Server Port:          8001

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

Concurrency Level:    10
Time taken for tests:  0.826 seconds
Complete requests:    100
Failed requests:       0
Non-2xx responses:    100
Total transferred:    696500 bytes
Total body sent:      21400
HTML transferred:     661900 bytes
Requests per second:  121.11 [#/sec] (mean)
Time per request:      82.572 [ms] (mean)
Time per request:      8.257 [ms] (mean, across all concurrent requests)
Transfer rate:         823.74 [Kbytes/sec] received
                      25.31 kb/s sent
                      849.05 kb/s total


Connection Times (ms)
              min    mean[+/-sd] median    max
Connect:        0      0   0.0      0      0
Processing:    26     79  14.0     78    125
Waiting:        5     65  16.5     62    125
Total:         26     79  13.9     78    125


Percentage of the requests served within a certain time (ms)
 50%      78
 66%      83
 75%      85
 80%      88
 90%      98
 95%     100
 98%     104
 99%     125
100%     125 (longest request)
```

## b. POST /auth/login

```
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
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Benchmarking 10.51.4.1 (be patient).....done


Server Software:      nginx/1.14.2
Server Hostname:      10.51.4.1
Server Port:          8001

Document Path:        /api/auth/login
Document Length:      335 bytes

Concurrency Level:    10
Time taken for tests:  15.478 seconds
Complete requests:    100
Failed requests:       40
  (Connect: 0, Receive: 0, Length: 40, Exceptions: 0)
Non-2xx responses:    40
Total transferred:    315666 bytes
Total body sent:      21100
HTML transferred:     284860 bytes
Requests per second:  6.46 [#/sec] (mean)
Time per request:     1547.815 [ms] (mean)
Time per request:     154.782 [ms] (mean, across all concurrent requests)
Transfer rate:        19.92 [Kbytes/sec] received
                      1.33 kb/s sent
                      21.25 kb/s total


Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    0   0.1      0      0
Processing:    55 1535 2212.5    798   6246
Waiting:       40 1527 2217.3    798   6246
Total:         55 1535 2212.5    798   6246


Percentage of the requests served within a certain time (ms)
 50%    798
 66%    849
 75%    868
 80%   5700
 90%   5844
 95%   5941
 98%   6121
 99%   6246
100%   6246 (longest request)
```

### c. GET /me

```
% Total      % Received % Xferd  Average Speed   Time    Time     Time  Cur
      Dload  Upload    Total      Spent      Left   Spee
100   392    0   335   100     57   2815    478  --:--:--  --:--:--  --:--:--  33
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
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Benchmarking 10.51.4.1 (be patient).....done


Server Software:      nginx/1.14.2
Server Hostname:      10.51.4.1
Server Port:          8001


Document Path:        /api/me
Document Length:       6619 bytes


Concurrency Level:      10
Time taken for tests:    1.613 seconds
Complete requests:      100
Failed requests:         0
Non-2xx responses:      100
Total transferred:      696500 bytes
HTML transferred:       661900 bytes
Requests per second:    61.98 [#/sec] (mean)
Time per request:       161.349 [ms] (mean)
Time per request:       16.135 [ms] (mean, across all concurrent requests)
Transfer rate:          421.56 [Kbytes/sec] received


Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    1   1.9      0     14
Processing:    50   154   31.6    152    227
Waiting:       28   148   32.2    148    222
Total:         51   154   31.6    153    227


Percentage of the requests served within a certain time (ms)
 50%    153
 66%    166
 75%    177
 80%    180
 90%    192
 95%    210
 98%    214
 99%    227
100%    227 (longest request)
```

## V. PHP-FPM (Soal 19)

### a. Script 1

```
pm = dynamic
pm.max_children = 5
pm.start_servers = 3
pm.min_spare_servers = 1
pm.max_spare_servers = 5
```

```
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
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Benchmarking riegel.canyon.e29.com (be patient).....done


Server Software:      nginx/1.14.2
Server Hostname:      riegel.canyon.e29.com
Server Port:          80

Document Path:        /api/auth/login
Document Length:      324 bytes

Concurrency Level:    10
Time taken for tests:  7.965 seconds
Complete requests:    100
Failed requests:       12
    (Connect: 0, Receive: 0, Length: 12, Exceptions: 0)
Non-2xx responses:    12
Total transferred:    136960 bytes
Total body sent:      21800
HTML transferred:     107940 bytes
Requests per second:  12.55 [#/sec] (mean)
Time per request:     796.538 [ms] (mean)
Time per request:     79.654 [ms] (mean, across all concurrent requests)
Transfer rate:        16.79 [Kbytes/sec] received
                     2.67 kb/s sent
                     19.46 kb/s total


Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    1   1.4      0     12
Processing:    10  777 348.7    830   1419
Waiting:        9   773 354.9    829   1419
Total:         10  777 348.9    832   1419


Percentage of the requests served within a certain time (ms)
 50%    832
 66%    937
 75%   1045
 80%   1093
 90%   1197
 95%   1300
 98%   1370
 99%   1419
100%   1419 (longest request)
```

## b. Script 2

```
pm = dynamic
pm.max_children = 15
pm.start_servers = 5
pm.min_spare_servers = 5
pm.max_spare_servers = 10
```

```
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Benchmarking riegel.canyon.e29.com (be patient).....done


Server Software:      nginx/1.14.2
Server Hostname:      riegel.canyon.e29.com
Server Port:          80

Document Path:        /api/auth/login
Document Length:      324 bytes

Concurrency Level:    10
Time taken for tests:  6.715 seconds
Complete requests:    100
Failed requests:       27
  (Connect: 0, Receive: 0, Length: 27, Exceptions: 0)
Non-2xx responses:    27
Total transferred:    232328 bytes
Total body sent:      21800
HTML transferred:     202365 bytes
Requests per second:  14.89 [#/sec] (mean)
Time per request:     671.452 [ms] (mean)
Time per request:     67.145 [ms] (mean, across all concurrent requests)
Transfer rate:        33.79 [Kbytes/sec] received
                      3.17 kb/s sent
                      36.96 kb/s total


Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    1   1.5      0     10
Processing:    12  648 425.0     732   1306
Waiting:        9  645 428.2     732   1306
Total:         12  649 424.8     732   1308


Percentage of the requests served within a certain time (ms)
 50%    732
 66%    834
 75%   1038
 80%   1094
 90%   1199
 95%   1233
 98%   1303
 99%   1308
100%   1308 (longest request)
```



### c. Script 3

```
pm = dynamic
pm.max_children = 50
pm.start_servers = 25
pm.min_spare_servers = 10
pm.max_spare_servers = 25
```

```
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
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Licensed to The Apache Software Foundation, http://www.apache.org/
```

```
Benchmarking riegel.canyon.e29.com (be patient).....done
```

```
Server Software:      nginx/1.14.2
Server Hostname:      riegel.canyon.e29.com
Server Port:          80
```

```
Document Path:        /api/auth/login
Document Length:       324 bytes
```

```
Concurrency Level:      10
Time taken for tests:    8.845 seconds
Complete requests:      100
Failed requests:         0
Total transferred:      60700 bytes
Total body sent:        21800
HTML transferred:       32400 bytes
Requests per second:    11.31 [#/sec] (mean)
Time per request:       884.515 [ms] (mean)
Time per request:       88.452 [ms] (mean, across all concurrent requests)
Transfer rate:          6.70 [Kbytes/sec] received
                        2.41 kb/s sent
                        9.11 kb/s total
```

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	0 0.5	0	3
Processing:	103	862 171.1	862	1312
Waiting:	102	862 171.1	862	1312
Total:	103	862 171.1	862	1314

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

50%	862
66%	918
75%	970
80%	986
90%	1049
95%	1142
98%	1232
99%	1314
100%	1314 (longest request)

## **VI. Analisis PHP-FPM**

### **a. Script 1**

Hasilnya lumayan lambat dikarenakan hanya menggunakan jumlah pekerja yang sedikit, server menjadi sedikit yang bisa menangani request

### **b. Script 2**

Hasil requests per second lebih besar dibanding 2 script lainnya karena menggunakan jumlah pekerja yang optimal tidak terlalu banyak dan tidak terlalu sedikit.

### **c. Script 3**

Hasil request yang paling lambat karena menggunakan banyak resource seperti cpu, memory

Penggunaan pm. yang efisien dapat meningkatkan performa website, namun perlu diingat bahwa hasil tes diatas tidak selalu stabil dan angka mengalami fluktuasi.