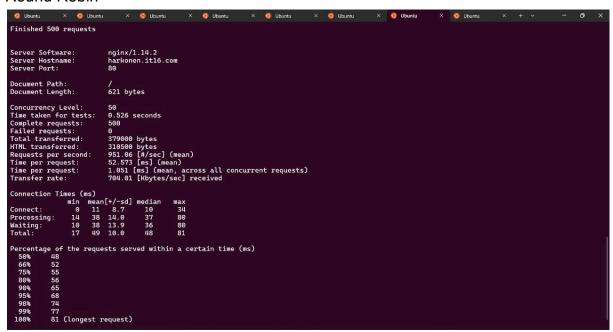
# Soal 8

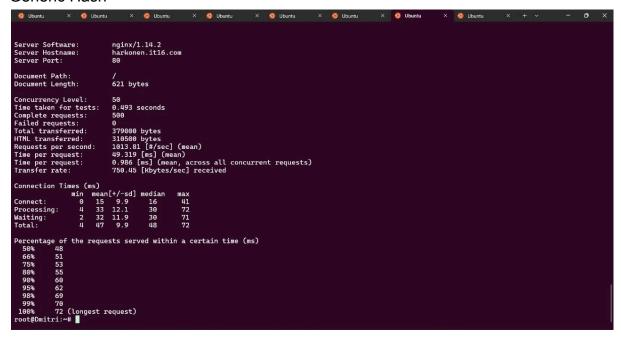
#### Round Robin



#### **Least Connection**

# Ip Hash

## Generic Hash



Dari hasil test di atas, dapat disimpulkan bahwa IP\_Hash dan Generic\_hash memiliki algoritma yang baik karena memiliki nilai time per request paling rendah.

Hal tersebut dikarenakan IP Hash dan Generic Hash menggunakan algoritma hash untuk melakukan load balancing. Algoritma hash akan melakukan hashing terhadap IP address dari client yang melakukan request. Sehingga setiap client akan mendapatkan server yang sama selama server tersebut masih aktif.

# Soal 9

#### 3 Worker

#### 2 Worker

1 Worker

Kesimpulannya adalah penggunaan 1 worker saja lebih cepat daripada menggunakan 3 worker, namun untuk penggunaan yang efisien dapat dilihat dari penggunaan 2 worker.

# soal 19

#### - Default

```
1    echo '[www]
2    user = www-data
3    group = www-data
4    listen = /run/php/php8.0-fpm.sock
5    listen.owner = www-data
6    listen.group = www-data
7    php_admin_value[disable_functions] = exec,passthru,shell_exec,system
8    php_admin_flag[allow_url_fopen] = off
9
10    pm = dynamic
11    pm.max_children = 5
12    pm.start_servers = 2
13    pm.min_spare_servers = 1
14    pm.max_spare_servers = 3' > /etc/php/8.0/fpm/pool.d/www.conf
15
16    service php8.0-fpm restart
17    service nginx restart
```

#### Test 1

```
root@Leto:~# cat test1.sh
echo '[www]
user = www-data
group = www-data
listen = /run/php/php8.0-fpm.sock
listen.owner = www-data
listen.group = www-data
php_admin_value[disable_functions] = exec,passthru,shell_exec,system
php_admin_flag[allow_url_fopen] = off

pm = dynamic
pm.max_children = 10
pm.start_servers = 4
pm.min_spare_servers = 2
pm.max_spare_servers = 6' > /etc/php/8.0/fpm/pool.d/www.conf

service php8.0-fpm restart
service nginx restart
```

### - Test 2

```
root@Leto:~# cat test2.sh
echo '[www]
user = www-data
group = www-data
listen = /run/php/php8.0-fpm.sock
listen.owner = www-data
listen.group = www-data
php_admin_value[disable_functions] = exec,passthru,shell_exec,system
php_admin_flag[allow_url_fopen] = off

pm = dynamic
pm.max_children = 20
pm.start_servers = 8
pm.min_spare_servers = 4
pm.max_spare_servers = 12' > /etc/php/8.0/fpm/pool.d/www.conf

service php8.0-fpm restart
service nginx restart
```

# - Test 3

```
root@Leto:~# cat test3.sh
echo '[www]
user = www-data
group = www-data
listen = /run/php/php8.0-fpm.sock
listen.owner = www-data
listen.group = www-data
php_admin_value[disable_functions] = exec,passthru,shell_exec,system
php_admin_flag[allow_url_fopen] = off

pm = dynamic
pm.max_children = 40
pm.start_servers = 16
pm.min_spare_servers = 8
pm.max_spare_servers = 24' > /etc/php/8.0/fpm/pool.d/www.conf

service php8.0-fpm restart
service nginx restart
```

#### Hasil Default

Hasil Test 1

```
root@Pault-# bash soalia-19.sh
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
Copyright 196 Adam Wiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking atreides.iti6.com (be patient)....done

Server Software: nginx/1.14.2
Server Nostname: atreides.iti6.com
Server Port: 88

Document Path: /api/auth/login
Document Length: 169 bytes

Concurrency Level: 10
Time taken for tests: 0.336 seconds
Complete requests: 100
Failed requests: 100
Total transferred: 31900 bytes

Total body sent: 1690 bytes

Total body sent: 16900 bytes

Requests per second: 2765.64 [#/sec] (mean)
Time per request: 3.616 [ms] (mean)
Time per request: 3.626 [ms] (mean)
Time per request: 3.636 [ms] (mean)
Connection Times (ms)

Connection Times (ms)

min mean[*/-sd] median max

Connect: 0 2 1.1 1 5 5
Processing: 1 2 0.9 1 5
Walting: 1 2 0.9 1 5
Walti
```

# Hasil Test 2

#### Hasil Test 3

```
root@faul:-# bash soall8-19.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 atreides.it16.com (be patient)....done

Server Software: nginx/1.14.2
Server Hostname: atreides.it16.com
Server Port: 80

Document Path: /api/auth/login
Document Length: 169 bytes

Concurrency Level: 18
Time taken for tests: 0.042 seconds
Complete requests: 100
Someter requests: 100
Total transferred: 1090 bytes

Total body sent: 20600
HTML transferred: 16900 bytes
Requests per second: 2363.40 [#/sec] (mean)
Time per request: 0.423 [ms] (mean, across all concurrent requests)
Transfer rate: 736.25 [Kbytes/sec] received
475.45 kb/s sent
1211.70 kb/s total

Connection Times (ms)

min mean[+/-sd] median max

Connect: 0 1 0.8 1 6
Processing: 1 2 1.9 2 7
Waiting: 0 2 1.8 2 7
Total: 1 4 2.2 3 8

Percentage of the requests served within a certain time (ms)
50% 3
66% 3
75% 4
80% 7
90% 8
95% 8
99% 8
100% 8 (longest request)
```

#### **Analisis**

- keadaaan default time taken = 0.050
- keadaaan test1 time taken = 0.036
- keadaaan test2 time taken = 0.022
- keadaaan test3 time taken = 0.042

Dari hasil uji coba dapat disimpulkan bahwa meningkatkan pm dapat meningkatkan efektifitas, namun ketika test3 time taken sedikit meningkat, menunjukkan bahwa terlalu banyak meningkatkan pm bisa menimbulkan overhead manajemen proses yang lebih tinggi atau resource contention, sehingga performa tidak selalu linear meningkat. Oleh karena itu, penting untuk menemukan pengaturan pm yang optimal.