

Pemrograman Jaringan B
Laporan Performance Test
Tugas 9



Ditulis Oleh:

Adnan Erlangga Raharja

05111740000100

Dosen:

Royyana Muslim Ijtihadie, S.Kom., M.Kom., Ph.D.

DEPARTEMEN INFORMATIKA
FAKULTAS TEKNOLOGI INFORMASI DAN KOMUNIKASI
INSTITUT TEKNOLOGI SEPULUH NOPEMBER

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Dokumentasi Tugas 9

Tugas 9:

1. Pull update terakhir
2. Jalankan kedua model tersebut
 - a. Server_async_http.py di port 45000
 - b. Server_thread_http.py di port 46000
3. Ujicobalah dengan apache benchmark untuk 1000 request dan konkurensi yang bervariasi
4. Buatlah tabel untuk melaporkan hasilnya

Jawaban:

Tabel Hasil Benchmark **Asynchronous Server**.

No test	Concurrency level	Time taken for test [seconds]	Complete request	Failed request	Total transferred [bytes]	Request per second [#/sec]	Time per request [ms]	Transfer rate [Kbytes/sec]
1	1	1.606	1000	0	122000	622.49	1.606	74.16
2	5	0.731	1000	0	122000	1368.26	3.654	163.02
3	10	72.321	1000	0	122000	13.83	723.208	1.65
4	50	63.810	1000	0	122000	15.67	3190.521	1.87
5	100	64.813	1000	0	122000	15.43	6481.274	1.84
6	250	65.999	1000	0	122000	15.15	16499.863	1.81
7	500	66.286	1000	0	122000	14.96	33413.018	1.78
8	1000	70.832	1000	0	122000	14.12	70832.143	1.68

Screenshots:

Concurrency Level 1

```
XAMPP for Windows
Completed 1000 requests
Finished 1000 requests

Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          45000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    1
Time taken for tests:  1.606 seconds
Complete requests:    1000
Failed requests:       0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  622.49 [#/sec] (mean)
Time per request:     1.606 [ms] (mean)
Time per request:     1.606 [ms] (mean, across all concurrent requests)
Transfer rate:        74.16 [Kbytes/sec] received

Connection Times (ms)
  min  mean[+/-sd] median  max
Connect:  0   0  0.4   0    1
Processing: 0   1  0.8   1    8
Waiting:  0   1  0.8   1    8
Total:    1   2  0.8   1    8
WARNING: The median and mean for the total time are not within a normal deviation
These results are probably not that reliable.

Percentage of the requests served within a certain time (ms)
 50%    1
 66%    2
 75%    2
 80%    2
 90%    3
 95%    3
 98%    4
 99%    4
100%    8 (longest request)

Elang@ELANG-NITROS c:\xampp
#
```

Concurrency Level 5

```
XAMPP for Windows
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:      myserver/1.0
Server Hostname:     127.0.0.1
Server Port:         45000

Document Path:       /
Document Length:     4 bytes

Concurrency Level:    5
Time taken for tests: 0.731 seconds
Complete requests:    1000
Failed requests:       0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  1368.26 [#/sec] (mean)
Time per request:     3.654 [ms] (mean)
Time per request:     0.731 [ms] (mean, across all concurrent requests)
Transfer rate:        163.02 [Kbytes/sec] received

Connection Times (ms)
  min  mean[+/-sd] median  max
Connect:  0    0  0.4      0    1
Processing:  1    3  1.1      3    8
Waiting:    1    3  1.1      3    8
Total:      1    4  1.1      3    8

Percentage of the requests served within a certain time (ms)
 50%    3
 66%    4
 75%    4
 80%    5
 90%    5
 95%    6
 98%    6
 99%    6
100%    8 (longest request)

Elang@ELANG-NITROS c:\xampp
#
```

Concurrency Level 10

```
XAMPP for Windows
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:      myserver/1.0
Server Hostname:     127.0.0.1
Server Port:         45000

Document Path:       /
Document Length:     4 bytes

Concurrency Level:    10
Time taken for tests: 72.321 seconds
Complete requests:    1000
Failed requests:       0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  13.83 [#/sec] (mean)
Time per request:     723.208 [ms] (mean)
Time per request:     72.321 [ms] (mean, across all concurrent requests)
Transfer rate:        1.65 [Kbytes/sec] received

Connection Times (ms)
  min  mean[+/-sd] median  max
Connect:  0  72.175.9      0    502
Processing:  3  650.220.5  503  1006
Waiting:    1  500.27.4      502   505
Total:      501  723.248.4  504  1006

Percentage of the requests served within a certain time (ms)
 50%   504
 66%  1003
 75%  1003
 80%  1003
 90%  1004
 95%  1004
 98%  1005
 99%  1006
100% 1006 (longest request)

Elang@ELANG-NITROS c:\xampp
#
```

Concurrency Level 50

```
XAMPP for Windows
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:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          45000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:     50
Time taken for tests:  63.810 seconds
Complete requests:     1000
Failed requests:       0
Non-2xx responses:     1000
Total transferred:     122000 bytes
HTML transferred:      4000 bytes
Requests per second:   15.67 [#/sec] (mean)
Time per request:      3190.521 [ms] (mean)
Time per request:      63.810 [ms] (mean, across all concurrent requests)
Transfer rate:         1.87 [kbytes/sec] received

Connection Times (ms)
      min      mean[+/-sd] median   max
Connect:    0   64 166.8      0     504
Processing:  3 3059 483.3    3016   3521
Waiting:    2 1953 819.1    2010   3019
Total:      3 3122 485.0    3017   3521

Percentage of the requests served within a certain time (ms)
 50%   3017
 66%   3512
 75%   3514
 80%   3515
 90%   3516
 95%   3517
 98%   3519
 99%   3519
100%   3521 (longest request)

Elang@ELANG-NITROS c:\xampp
#
```

Concurrency Level 100

```
XAMPP for Windows
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:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          45000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:     100
Time taken for tests:  64.813 seconds
Complete requests:     1000
Failed requests:       0
Non-2xx responses:     1000
Total transferred:     122000 bytes
HTML transferred:      4000 bytes
Requests per second:   15.43 [#/sec] (mean)
Time per request:      6481.274 [ms] (mean)
Time per request:      64.813 [ms] (mean, across all concurrent requests)
Transfer rate:         1.84 [kbytes/sec] received

Connection Times (ms)
      min      mean[+/-sd] median   max
Connect:    0   65 167.9      0     503
Processing:  4 6109 1204.7    6530   7035
Waiting:    1 3317 1841.8    3513   6530
Total:      5 6173 1203.2    6530   7035

Percentage of the requests served within a certain time (ms)
 50%   6530
 66%   6531
 75%   6532
 80%   6533
 90%   6534
 95%   7028
 98%   7031
 99%   7033
100%   7035 (longest request)

Elang@ELANG-NITROS c:\xampp
#
```

Concurrency Level 250

```
XAMPP for Windows
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:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          45000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    250
Time taken for tests:  65.999 seconds
Complete requests:    1000
Failed requests:       0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  15.15 [#/sec] (mean)
Time per request:     16499.863 [ms] (mean)
Time per request:     65.999 [ms] (mean, across all concurrent requests)
Transfer rate:        1.81 [kbytes/sec] received

Connection Times (ms)
      min   mean[+/-sd] median   max
Connect:    0   66 169.6      0     612
Processing: 11 14307 4300.1  16079  18068
Waiting:    1  8641 4838.3   8540  17565
Total:      11 14373 4300.5  16081  18068

Percentage of the requests served within a certain time (ms)
 50% 16081
 66% 16259
 75% 16577
 80% 16646
 90% 17079
 95% 17568
 98% 17572
 99% 17573
100% 18068 (longest request)

Elang@ELANG-NITROS c:\xampp
#
```

Concurrency Level 500

```
XAMPP for Windows
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:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          45000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    500
Time taken for tests:  66.826 seconds
Complete requests:    1000
Failed requests:       0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  14.96 [#/sec] (mean)
Time per request:     33413.018 [ms] (mean)
Time per request:     66.826 [ms] (mean, across all concurrent requests)
Transfer rate:        1.78 [kbytes/sec] received

Connection Times (ms)
      min   mean[+/-sd] median   max
Connect:    0   67 170.1      0     503
Processing: 25 24652 11172.8  31662  35137
Waiting:    1 16827 9802.2  16586  35132
Total:      25 24719 11176.0  31663  35138

Percentage of the requests served within a certain time (ms)
 50% 31663
 66% 33150
 75% 33646
 80% 34144
 90% 34638
 95% 35135
 98% 35137
 99% 35137
100% 35138 (longest request)

Elang@ELANG-NITROS c:\xampp
#
```

Concurrency Level 1000

```
XAMPP for Windows
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:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          45000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    1000
Time taken for tests:  70.832 seconds
Complete requests:    1000
Failed requests:       0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  14.12 [#/sec] (mean)
Time per request:      70832.143 [ms] (mean)
Time per request:      70.832 [ms] (mean, across all concurrent requests)
Transfer rate:         1.68 [kbytes/sec] received

Connection Times (ms)
      min    mean[+/-sd] median    max
Connect:    0   71.174.4      0      503
Processing: 57 35585.20673.2 35667  70782
Waiting:    1 35486.20686.2 35638  70775
Total:      57 35656.20672.5 35667  70782

Percentage of the requests served within a certain time (ms)
 50%  35667
 66%  47205
 75%  53724
 80%  57236
 90%  64257
 95%  67765
 98%  69772
 99%  70780
100%  70782 (longest request)

Elang@ELANG-NITROS c:\xampp
#
```

Tabel Hasil Benchmark **Thread Server**.

No test	Concurrency level	Time taken for test [seconds]	Complete request	Failed request	Total transferred [bytes]	Request per second [#/sec]	Time per request [ms]	Transfer rate [Kbytes/sec]
1	1	147.975	1000	0	122000	6.76	147.975	0.81
2	5	260.660	1000	0	122000	3.84	1303.299	0.46
3	10	250.351	1000	0	122000	3.99	2503.509	0.48
4	50	263.431	1000	0	122000	3.80	13171.547	0.45
5	100	391.736	1000	0	122000	2.55	39173.610	0.30
6	250	253.066	1000	0	122000	3.95	63266.570	0.47
7	500	250.360	1000	0	122000	3.99	125179.848	0.48
8	1000	259.717	1000	0	122000	3.85	259716.878	0.46

Screenshots:

Concurrency Level 1

```

XAMPP for Windows
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:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          40000

Document Path:        /
Document Length:      4 bytes

Concurrency level:    1
Time taken for tests: 147.975 seconds
Complete requests:    1000
Failed requests:      0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  6.76 [#/sec] (mean)
Time per request:     147.975 [ms] (mean)
Time per request:     147.975 [ms] (mean, across all concurrent requests)
Transfer rate:        0.81 [Kbytes/sec] received

Connection Times (ms)
      min    mean[+/-sd] median    max
Connect:    0      0.4      0         1
Processing:  1 148  89.1  139     637
Waiting:    1 138  84.2  129     611
Total:       1 148  89.4  139     637

Percentage of the requests served within a certain time (ms)
 50%    139
 66%    180
 75%    285
 80%    222
 90%    272
 95%    312
 98%    344
 99%    374
100%    637 (longest request)

elang@ELANG-NITROS c:\xampp
#

```

Concurrency Level 5

```
XAMPP for Windows
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:      myserver/1.0
Server Hostname:     127.0.0.1
Server Port:         46000

Document Path:       /
Document Length:     4 bytes

Concurrency Level:    5
Time taken for tests: 260.660 seconds
Complete requests:    1000
Failed requests:      0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  3.84 [#/sec] (mean)
Time per request:     1303.299 [ms] (mean)
Time per request:     260.660 [ms] (mean, across all concurrent requests)
Transfer rate:        0.46 [kbytes/sec] received

Connection Times (ms)
      min      mean[+/-sd] median   max
Connect:    0   254 251.6   500   1003
Processing: 410 1047 172.0   1002   2147
Waiting:    189   868 288.7   1002   2147
Total:      410 1300 279.3   1502   2649

Percentage of the requests served within a certain time (ms)
 50%    1502
 66%    1503
 75%    1504
 80%    1504
 90%    1506
 95%    1579
 98%    2003
 99%    2007
100%    2649 (longest request)

Elang@ELANG-NITROS c:\xampp
#
```

Concurrency Level 10

```
XAMPP for Windows
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:      myserver/1.0
Server Hostname:     127.0.0.1
Server Port:         46000

Document Path:       /
Document Length:     4 bytes

Concurrency Level:    10
Time taken for tests: 250.351 seconds
Complete requests:    1000
Failed requests:      0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  3.99 [#/sec] (mean)
Time per request:     2503.509 [ms] (mean)
Time per request:     250.351 [ms] (mean, across all concurrent requests)
Transfer rate:        0.48 [kbytes/sec] received

Connection Times (ms)
      min      mean[+/-sd] median   max
Connect:    0   250 250.7    1    513
Processing: 284 2245 276.5   2007   2518
Waiting:    1 1255 563.6   1501   2506
Total:      502 2495 119.5   2506   2518

Percentage of the requests served within a certain time (ms)
 50%    2506
 66%    2506
 75%    2506
 80%    2507
 90%    2507
 95%    2508
 98%    2508
 99%    2516
100%    2518 (longest request)

Elang@ELANG-NITROS c:\xampp
#
```

Concurrency Level 50


```
XAMPP for Windows
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:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          46000

Document Path:        /
Document Length:       4 bytes

Concurrency Level:     50
Time taken for tests:   263.431 seconds
Complete requests:      1000
Failed requests:         0
Non-2xx responses:      1000
Total transferred:      122000 bytes
HTML transferred:       4000 bytes
Requests per second:    3.80 [#/sec] (mean)
Time per request:       13171.547 [ms] (mean)
Time per request:       263.431 [ms] (mean, across all concurrent requests)
Transfer rate:          0.45 [kbytes/sec] received

Connection Times (ms)
      min      mean[+/-sd] median   max
Connect:    0   262 251.5    500   1001
Processing: 917 12549 1735.6  12532  15545
Waiting:    367  6656 3631.8   6517  14541
Total:      1227 12811 1730.2  12534  16045

Percentage of the requests served within a certain time (ms)
 50%  12534
 66%  13035
 75%  13537
 80%  14031
 90%  14042
 95%  14540
 98%  15542
 99%  15545
100% 16045 (longest request)

Elang@ELANG-NITROS c:\xampp
#
```

Concurrency Level 100

```
XAMPP for Windows
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:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          46000

Document Path:        /
Document Length:       4 bytes

Concurrency Level:     100
Time taken for tests:   391.736 seconds
Complete requests:      1000
Failed requests:         0
Non-2xx responses:      1000
Total transferred:      122000 bytes
HTML transferred:       4000 bytes
Requests per second:    2.55 [#/sec] (mean)
Time per request:       39173.610 [ms] (mean)
Time per request:       391.736 [ms] (mean, across all concurrent requests)
Transfer rate:          0.30 [kbytes/sec] received

Connection Times (ms)
      min      mean[+/-sd] median   max
Connect:    0   389 317.5    501   1505
Processing: 1310 37122 9948.7  34587  53140
Waiting:    839 10941 11709.9  19048  53129
Total:      1699 37511 9992.6  35084  54135

Percentage of the requests served within a certain time (ms)
 50%  35084
 66%  39100
 75%  46114
 80%  50129
 90%  51632
 95%  52628
 98%  53139
 99%  53627
100% 54135 (longest request)

Elang@ELANG-NITROS c:\xampp
#
```

Concurrency Level 250

```
XAMPP for Windows
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:      myserver/1.0
Server Hostname:      localhost
Server Port:          46000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    250
Time taken for tests:  253.066 seconds
Complete requests:    1000
Failed requests:       0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  3.95 [#/sec] (mean)
Time per request:     63266.570 [ms] (mean)
Time per request:     253.066 [ms] (mean, across all concurrent requests)
Transfer rate:         0.47 [kbytes/sec] received

Connection Times (ms)
      min      mean[+/-sd] median   max
Connect:    0    251 250.7    500    507
Processing: 405 54762 16400.6  62644  63152
Waiting:    3 31193 18152.5   31079  63144
Total:      448 55012 16400.7  62663  63649

Percentage of the requests served within a certain time (ms)
 50%  62663
 66%  62683
 75%  63144
 80%  63145
 90%  63154
 95%  63645
 98%  63647
 99%  63648
100%  63649 (longest request)

Elang@ELANG-NITROS c:\xampp
#
```

Concurrency Level 500

```
XAMPP for Windows
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:      myserver/1.0
Server Hostname:      localhost
Server Port:          46000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    250
Time taken for tests:  253.066 seconds
Complete requests:    1000
Failed requests:       0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  3.95 [#/sec] (mean)
Time per request:     63266.570 [ms] (mean)
Time per request:     253.066 [ms] (mean, across all concurrent requests)
Transfer rate:         0.47 [kbytes/sec] received

Connection Times (ms)
      min      mean[+/-sd] median   max
Connect:    0    251 250.7    500    507
Processing: 405 54762 16400.6  62644  63152
Waiting:    3 31193 18152.5   31079  63144
Total:      448 55012 16400.7  62663  63649

Percentage of the requests served within a certain time (ms)
 50%  62663
 66%  62683
 75%  63144
 80%  63145
 90%  63154
 95%  63645
 98%  63647
 99%  63648
100%  63649 (longest request)

Elang@ELANG-NITROS c:\xampp
#
```

Concurrency Level 1000

```
XAMPP for Windows
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:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          40000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    1000
Time taken for tests:  259.717 seconds
Complete requests:     1000
Failed requests:        0
Non-2xx responses:     1000
Total transferred:     122000 bytes
HTML transferred:      4000 bytes
Requests per second:   3.85 [#/sec] (mean)
Time per request:      259716.878 [ms] (mean)
Time per request:      259.717 [ms] (mean, across all concurrent requests)
Transfer rate:          0.46 [kbytes/sec] received

Connection Times (ms)
      min    mean[+/-sd] median    max
Connect:    0   259.259.3    500    504
Processing: 446 132249.74346.3 133811 258897
Waiting:    314 131965.74368.3 133290 258583
Total:      788 132508.74335.7 133814 258897

Percentage of the requests served within a certain time (ms)
 50%  133814
 66%  174401
 75%  196955
 80%  209484
 90%  224534
 95%  247063
 98%  254580
 99%  257087
100%  258897 (longest request)

Elang@ELANG-NITROS c:\xampp
#
```

Kesimpulan

Dari hasil benchmark yang telah dilakukan diatas, bisa disimpulkan bahwa penggunaan asynchronous server lebih baik daripada thread server.