

Laporan Benchmark Armin

1. Algoritma Round Robin

```
Server Software:      nginx/1.10.3
Server Hostname:      192.239.3.2
Server Port:          1111

Document Path:        /
Document Length:       1429 bytes

Concurrency Level:     75
Time taken for tests:   1.777 seconds
Complete requests:     1000
Failed requests:        667
  (Connect: 0, Receive: 0, Length: 667, Exceptions: 0)
Total transferred:     1574000 bytes
HTML transferred:      1428000 bytes
Requests per second:   562.69 [#/sec] (mean)
Time per request:      133.288 [ms] (mean)
Time per request:      1.777 [ms] (mean, across all concurrent requests)
Transfer rate:         864.92 [Kbytes/sec] received

Connection Times (ms)
  min   mean[+/-sd] median   max
Connect:    4    29  46.4    27   1052
Processing: 17   100 109.9    88   1104
Waiting:    17    99 108.6    88   1104
Total:      22   129 118.0   116   1141
```

2. Algoritma Weighted RR

```
Server Software:      nginx/1.10.3
Server Hostname:      192.239.3.2
Server Port:          1112

Document Path:        /
Document Length:       1428 bytes

Concurrency Level:     75
Time taken for tests:   3.675 seconds
Complete requests:     1000
Failed requests:        500
  (Connect: 0, Receive: 0, Length: 500, Exceptions: 0)
Total transferred:     1573834 bytes
HTML transferred:      1427834 bytes
Requests per second:   272.13 [#/sec] (mean)
Time per request:      275.606 [ms] (mean)
Time per request:      3.675 [ms] (mean, across all concurrent requests)
Transfer rate:         418.25 [Kbytes/sec] received

Connection Times (ms)
  min   mean[+/-sd] median   max
Connect:    6    36  95.8    28   1057
Processing: 41    99  94.7    90   2480
Waiting:    40    98  93.7    90   2480
Total:      47   135 150.5   119   3499
```

3. Algoritma Generic Hash

```

Server Software:      nginx/1.10.3
Server Hostname:      192.239.3.2
Server Port:          1113

Document Path:        /
Document Length:      1428 bytes

Concurrency Level:    75
Time taken for tests:  2.078 seconds
Complete requests:    1000
Failed requests:      0
Total transferred:    1574000 bytes
HTML transferred:     1428000 bytes
Requests per second:  481.27 [#/sec] (mean)
Time per request:     155.839 [ms] (mean)
Time per request:     2.078 [ms] (mean, across all concurrent requests)
Transfer rate:        739.76 [Kbytes/sec] received

Connection Times (ms)
              min    mean[+/-sd] median   max
Connect:        4     29  32.9      28   1036
Processing:    20     95  37.7      91    529
Waiting:       20     93  28.1      91    331
Total:         23    125  50.4     119   1129

```

4. Algoritma IP Hash

```

Server Software:      nginx/1.10.3
Server Hostname:      192.239.3.2
Server Port:          1114

Document Path:        /
Document Length:      1427 bytes

Concurrency Level:    75
Time taken for tests:  2.288 seconds
Complete requests:    1000
Failed requests:      0
Total transferred:    1573000 bytes
HTML transferred:     1427000 bytes
Requests per second:  437.01 [#/sec] (mean)
Time per request:     171.622 [ms] (mean)
Time per request:     2.288 [ms] (mean, across all concurrent requests)
Transfer rate:        671.30 [Kbytes/sec] received

Connection Times (ms)
              min    mean[+/-sd] median   max
Connect:        3     31  56.5      29   1058
Processing:    34    100  83.6      87   1040
Waiting:       33     99  83.6      87   1040
Total:         39    131 101.1     116   1166

```

5. Algoritma Least Connection

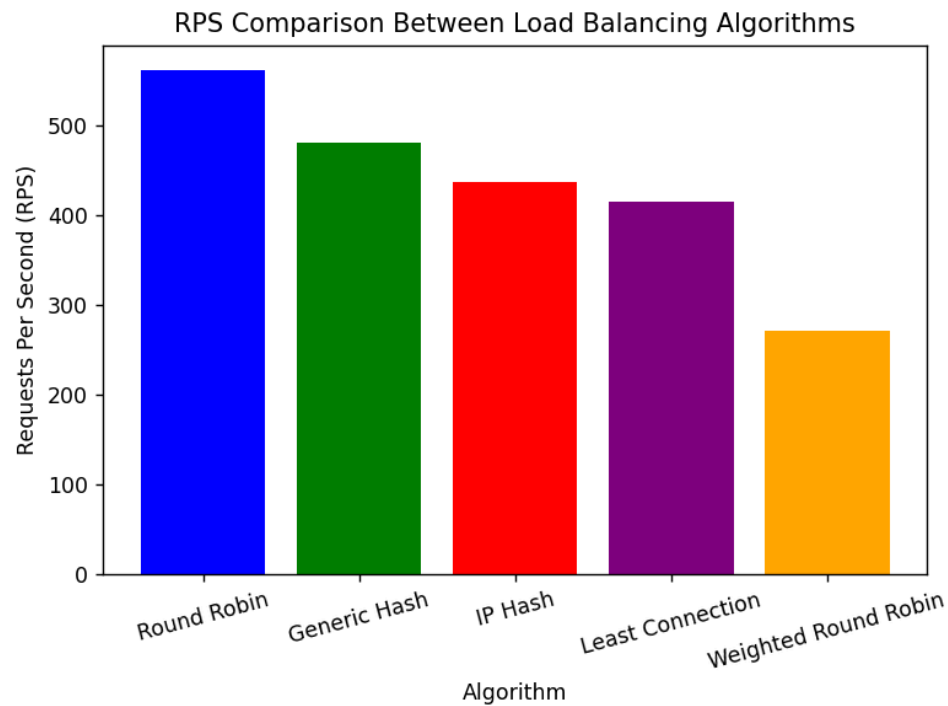
```
Server Software:      nginx/1.10.3
Server Hostname:     192.239.3.2
Server Port:         1115

Document Path:       /
Document Length:     1428 bytes

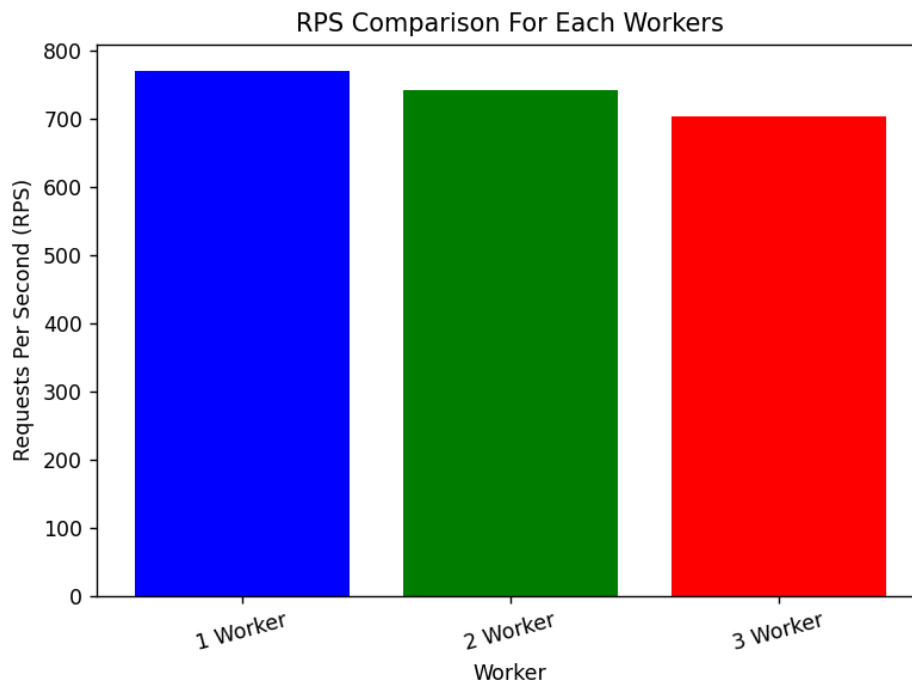
Concurrency Level:    75
Time taken for tests: 2.407 seconds
Complete requests:    1000
Failed requests:      671
  (Connect: 0, Receive: 0, Length: 671, Exceptions: 0)
Total transferred:    1574017 bytes
HTML transferred:     1428017 bytes
Requests per second:  415.51 [#/sec] (mean)
Time per request:     180.502 [ms] (mean)
Time per request:     2.407 [ms] (mean, across all concurrent requests)
Transfer rate:        638.69 [Kbytes/sec] received

Connection Times (ms)
      min  mean[+/-sd] median   max
Connect:    4    32  56.7     29   1050
Processing: 32   100  55.9     94   1111
Waiting:    31   100  55.3     94   1111
Total:      36   132  78.2    124   1146
```

Grafik Perbandingan Antar Algoritma



Grafik Perbandingan Antar Jumlah Worker



Kesimpulan

Dari grafik perbandingan RPS (Requests Per Second) antara berbagai algoritma load balancing tersebut, beberapa kesimpulan yang dapat diambil:

1. Performa Terbaik:
 - Algoritma Round Robin menunjukkan performa tertinggi dengan sekitar 550 RPS
 - Ini menandakan Round Robin paling efektif dalam menangani jumlah permintaan per detik
2. Urutan Performa (dari terbaik ke terendah):
 - Round Robin (~550 RPS)
 - Generic Hash (~480 RPS)
 - IP Hash (~440 RPS)
 - Least Connection (~410 RPS)
 - Weighted Round Robin (~270 RPS)
3. Perbandingan Relatif:
 - Ada perbedaan signifikan antara algoritma terbaik (Round Robin) dan terburuk (Weighted Round Robin)
 - Weighted Round Robin memiliki throughput hampir setengah dari Round Robin biasa
4. Implikasi Praktis:
 - Round Robin bisa menjadi pilihan utama jika prioritasnya adalah throughput tinggi

- Weighted Round Robin mungkin kurang cocok untuk situasi yang membutuhkan throughput tinggi
- Algoritma lain (Generic Hash, IP Hash, Least Connection) menunjukkan performa menengah yang masih cukup baik