

Nomor 8

I. Hasil Testing

a. Weighted Round Robin

```
$ ab -n 200 -c 10 -A netics:ajka01 http://channel.a01.com/
```

```
Server Software:      nginx/1.14.2
Server Hostname:      channel.a01.com
Server Port:          80

Document Path:        /
Document Length:      627 bytes

Concurrency Level:    10
Time taken for tests:  0.894 seconds
Complete requests:    200
Failed requests:      57
    (Connect: 0, Receive: 0, Length: 57, Exceptions: 0)
Total transferred:    152743 bytes
HTML transferred:     125343 bytes
Requests per second:  223.65 [#/sec] (mean)
Time per request:     44.712 [ms] (mean)
Time per request:     4.471 [ms] (mean, across all concurrent
requests)
Transfer rate:        166.80 [Kbytes/sec] received
```

Connection Times (ms)

	min	max	mean[+/-sd]	median	max
Connect:	1	10	4.1	10	25
Processing:	7	34	8.3	32	56
Waiting:	7	33	8.3	32	55
Total:	8	44	10.0	44	69

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

50%	44
66%	48
75%	50
80%	51
90%	54
95%	63
98%	68
99%	69
100%	69 (longest request)

```
(Connect: 0, Receive: 0, Length: 57, Exceptions: 0)
Total transferred: 152743 bytes
HTML transferred: 125343 bytes
Requests per second: 223.65 [#/sec] (mean)
Time per request: 44.712 [ms] (mean)
Time per request: 4.471 [ms] (mean, across all concurrent requests)
Transfer rate: 166.80 [Kbytes/sec] received

Connection Times (ms)
min mean[+/-sd] median max
Connect: 1 10 4.1 10 25
Processing: 7 34 8.3 32 56
Waiting: 7 33 8.3 32 55
Total: 8 44 10.0 44 69

Percentage of the requests served within a certain time (ms)
50% 44
66% 48
75% 50
80% 51
90% 54
95% 63
98% 68
99% 69
100% 69 (longest request)
root@Richter:~#

CPU[|||||] 37.3% Tasks: 10, 0 thr; 1 running
Mem[|||||] 1710M/1.92G Load average: 1.48 0.95 0.68
Swap[|||] 126M/2.00G Uptime: 22:44:13

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
6911 www-data 20 0 62316 5072 2988 R 2.9 0.3 0:00.21 nginx: worker process
7337 root 20 0 4864 3264 2752 R 1.0 0.2 0:01.04 httpd
6890 www-data 20 0 189M 6800 5432 S 1.0 0.3 0:00.19 php-fpm: pool www
6891 www-data 20 0 189M 5784 4504 S 1.0 0.3 0:00.05 php-fpm: pool www
6889 root 20 0 188M 1552 736 S 0.0 0.1 0:01.90 php-fpm: master process (/etc/php/7.3
1 root 20 0 4864 2008 1752 S 0.0 0.1 0:00.05 bash
84 root 20 0 2456 0 0 S 0.0 0.0 0:00.01 /gn3/bin/busybox sh -c while true; d
89 root 20 0 2456 0 0 S 0.0 0.0 0:00.00 /gn3/bin/busybox sh
91 root 20 0 2456 40 0 S 0.0 0.0 0:00.05 /tmp/gn3/bin/udhcpc -s /gn3/etc/udh
6909 root 20 0 61592 1676 0 S 0.0 0.1 0:00.00 nginx: master process /usr/nginx

F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Nice F9Kill F10Quit

CPU[|||||] 37.3% Tasks: 10, 0 thr; 1 running
Mem[|||||] 1710M/1.92G Load average: 1.48 0.95 0.68
Swap[|||] 126M/2.00G Uptime: 22:44:13

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
7309 root 20 0 4824 3152 2684 R 0.0 0.2 0:00.11 httpd
6567 root 20 0 183M 2048 1540 S 0.0 0.1 0:01.06 php-fpm: master process (/e
6869 www-data 20 0 189M 6896 5108 S 0.0 0.3 0:00.02 php-fpm: pool www
6868 www-data 20 0 189M 8012 6072 S 0.0 0.4 0:00.17 php-fpm: pool www
7493 www-data 20 0 62212 6776 4760 S 0.0 0.3 0:00.02 nginx: worker process
1 root 20 0 4000 2644 2392 S 0.0 0.1 0:00.06 bash
85 root 20 0 2456 0 0 S 0.0 0.0 0:00.01 /gn3/bin/busybox sh -c whi
91 root 20 0 2456 0 0 S 0.0 0.0 0:00.00 /gn3/bin/busybox sh
93 root 20 0 2456 40 0 S 0.0 0.0 0:00.05 /tmp/gn3/bin/udhcpc -s /gn
7490 root 20 0 61592 1720 48 S 0.0 0.1 0:00.00 nginx: master process /usr/

F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Nice F9Kill F10Quit

CPU[|||||] 48.4% Tasks: 10, 0 thr; 1 running
Mem[|||||] 1710M/1.92G Load average: 1.48 0.95 0.68
Swap[|||] 126M/2.00G Uptime: 22:44:13

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
7427 www-data 20 0 62212 6800 4776 S 2.1 0.3 0:00.06 nginx: worker process
7444 root 20 0 4324 3152 2684 R 0.0 0.2 0:00.15 httpd
6867 root 20 0 188M 2792 1524 S 0.0 0.1 0:01.86 php-fpm: master process (/e
93 root 20 0 2456 1064 1024 S 0.0 0.1 0:00.06 /tmp/gn3/bin/udhcpc -s /gn
6868 www-data 20 0 189M 7972 6080 S 0.0 0.4 0:00.13 php-fpm: pool www
6869 www-data 20 0 189M 6992 5264 S 0.0 0.3 0:00.03 php-fpm: pool www
1 root 20 0 4000 2036 1772 S 0.0 0.1 0:00.04 bash
85 root 20 0 2456 0 0 S 0.0 0.0 0:00.01 /gn3/bin/busybox sh -c whi
91 root 20 0 2456 0 0 S 0.0 0.0 0:00.00 /gn3/bin/busybox sh
7425 root 20 0 61592 1720 40 S 0.0 0.1 0:00.00 nginx: master process /usr/

F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Nice F9Kill F10Quit
```

b. Least Connection

```
$ ab -n 200 -c 10 -A netics:ajka01 http://channel.a01.com/
```

Server Software: nginx/1.14.2
Server Hostname: channel.a01.com
Server Port: 80

Document Path: /
Document Length: 627 bytes

Concurrency Level: 10
Time taken for tests: 0.646 seconds
Complete requests: 200
Failed requests: 69
(Connect: 0, Receive: 0, Length: 69, Exceptions: 0)
Total transferred: 152731 bytes
HTML transferred: 125331 bytes
Requests per second: 309.75 [#/sec] (mean)
Time per request: 32.284 [ms] (mean)
Time per request: 3.228 [ms] (mean, across all concurrent requests)
Transfer rate: 231.00 [Kbytes/sec] received

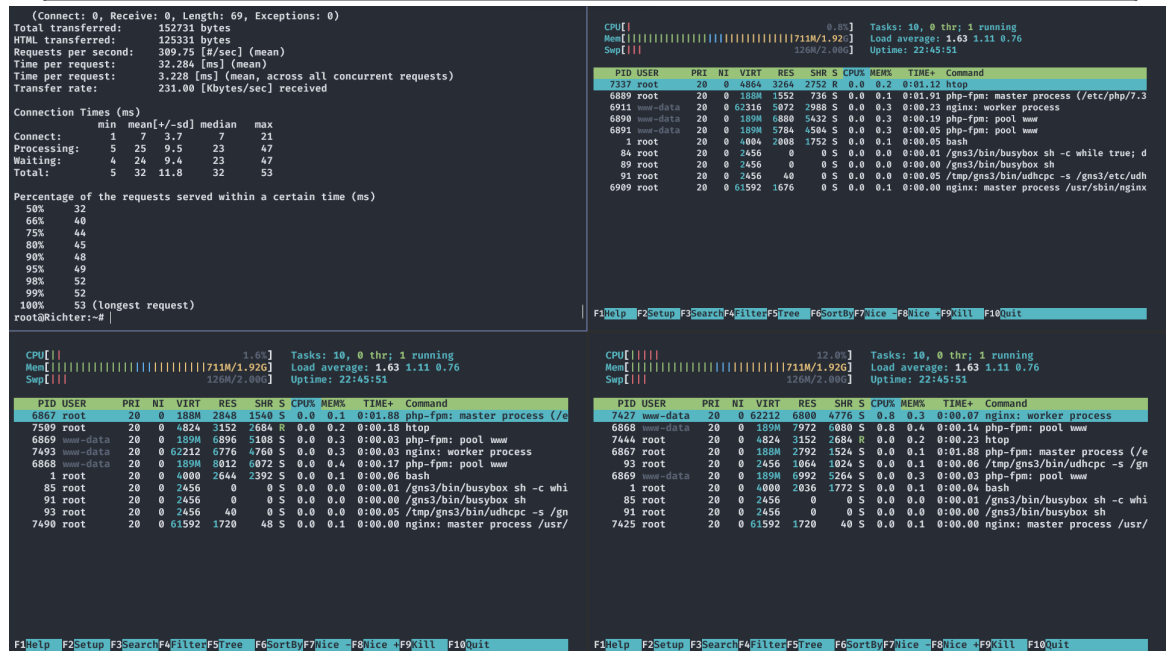
Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	1	7 3.7	7	21
Processing:	5	25 9.5	23	47
Waiting:	4	24 9.4	23	47
Total:	5	32 11.8	32	53

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

50%	32
66%	40
75%	44
80%	45
90%	48
95%	49

98% 52
99% 52
100% 53 (longest request)



c. IP Hash

```
$ ab -n 200 -c 10 -A netics:ajka01 http://channel.a01.com/
```

Server Software: nginx/1.14.2
Server Hostname: channel.a01.com
Server Port: 80

Document Path: /
Document Length: 627 bytes

Concurrency Level: 10
Time taken for tests: 0.555 seconds
Complete requests: 200
Failed requests: 0
Total transferred: 152800 bytes
HTML transferred: 125400 bytes
Requests per second: 360.17 [#/sec] (mean)
Time per request: 27.765 [ms] (mean)
Time per request: 2.776 [ms] (mean, across all concurrent requests)
Transfer rate: 268.72 [Kbytes/sec] received

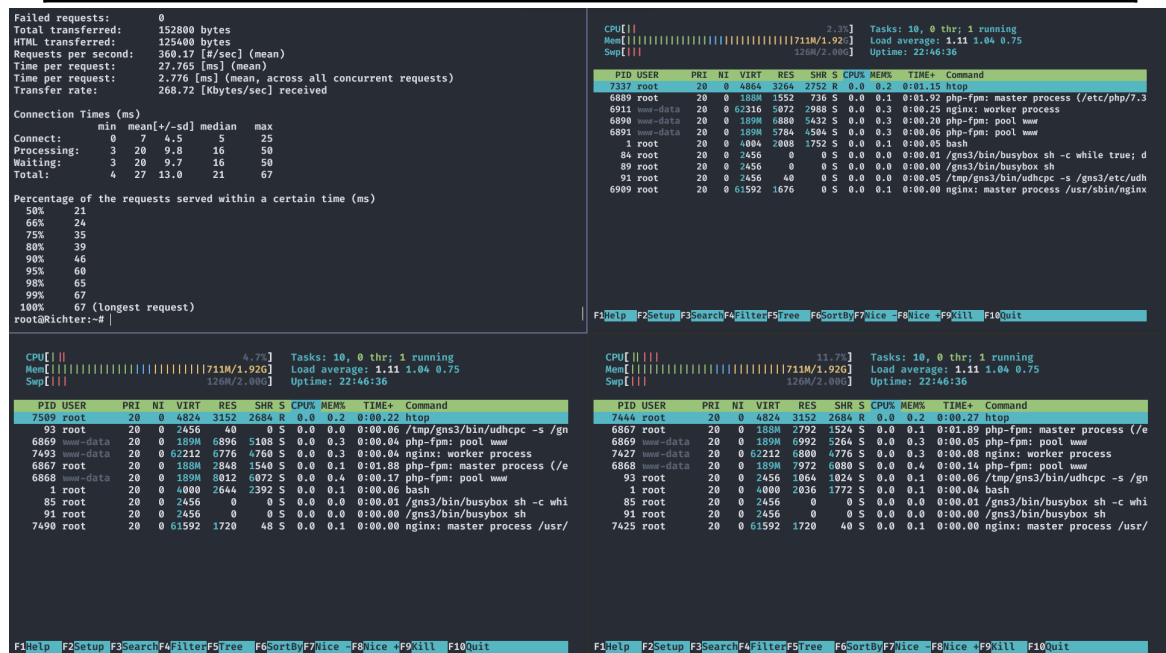
Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	7 4.5	5	25
Processing:	3	20 9.8	16	50
Waiting:	3	20 9.7	16	50
Total:	4	27 13.0	21	67

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

50%	21
66%	24
75%	35

80%	39
90%	46
95%	60
98%	65
99%	67
100%	67 (longest request)



d. Generic Hash

```
$ ab -n 200 -c 10 -A netics:ajka01 http://channel.a01.com/
```

Server Software: nginx/1.14.2
 Server Hostname: channel.a01.com
 Server Port: 80

Document Path: /
 Document Length: 627 bytes

Concurrency Level: 10
 Time taken for tests: 0.670 seconds
 Complete requests: 200
 Failed requests: 0
 Total transferred: 152800 bytes
 HTML transferred: 125400 bytes
 Requests per second: 298.62 [#/sec] (mean)
 Time per request: 33.488 [ms] (mean)
 Time per request: 3.349 [ms] (mean, across all concurrent requests)
 Transfer rate: 222.80 [Kbytes/sec] received

Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	7 3.5	7	17
Processing:	6	26 10.4	27	44
Waiting:	6	26 10.3	27	44
Total:	7	33 12.9	36	54

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

50%	36
66%	42
75%	44
80%	45
90%	50
95%	52
98%	52
99%	53
100%	54 (longest request)

```
Failed requests: 0
Total transferred: 152800 bytes
HTML transferred: 125400 bytes
Requests per second: 298.62 [#/sec] (mean)
Time per request: 33.488 [ms] (mean)
Time per request: 3.349 [ms] (mean, across all concurrent requests)
Transfer rate: 222.80 [Kbytes/sec] received
```

Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	7 3.5	7	17
Processing:	6	26 10.4	27	44
Waiting:	6	26 10.3	27	44
Total:	7	33 12.9	36	54

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

50%	36
66%	42
75%	44
80%	45
90%	50
95%	52
98%	52
99%	53
100%	54 (longest request)

root@richter:~#

```
CPU[||||| 8.5%] Tasks: 10, 0 thr; 1 running
Mem[||||| 711M/1.92G] Load average: 0.60 0.91 0.72
Swap[||| 126M/2.00G] Uptime: 22:47:21
```

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
6911	www-data	20	0	62316	5072	2988	S	0.8	0.3	0:00.26	nginx: worker process
7337	root	20	0	4864	3264	2752	R	0.0	0.2	0:01.19	htop
6889	root	20	0	1808	1552	736	S	0.0	0.1	0:01.93	php-fpm: master process (/etc/php/7.3
6890	www-data	20	0	189M	6880	5432	S	0.0	0.3	0:00.20	php-fpm: pool www
6891	www-data	20	0	189M	5784	4504	S	0.0	0.3	0:00.06	php-fpm: pool www
1	root	20	0	4004	2008	1752	S	0.0	0.1	0:00.05	bash
84	root	20	0	2456	0	0	S	0.0	0.0	0:00.01	/gnss3/bin/busybox sh -c while true; d
89	root	20	0	2456	0	0	S	0.0	0.0	0:00.00	/gnss3/bin/busybox sh
91	root	20	0	2456	40	0	S	0.0	0.0	0:00.05	/tmp/gnss3/bin/udhcpc -s /gnss3/etc/udh
6909	root	20	0	61592	1676	0	S	0.0	0.1	0:00.00	nginx: master process /usr/sbin/nginx

F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Nice +F9Kill F10Quit

```
CPU[||||| 10.5%] Tasks: 10, 0 thr; 1 running
Mem[||||| 711M/1.92G] Load average: 0.60 0.91 0.72
Swap[||| 126M/2.00G] Uptime: 22:47:21
```

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
7500	root	20	0	4824	3152	2684	R	0.8	0.2	0:00.27	htop
7493	www-data	20	0	62212	6764	4760	S	0.0	0.3	0:00.09	nginx: worker process
6868	www-data	20	0	189M	8012	6072	S	0.0	0.4	0:00.19	php-fpm: pool www
6869	www-data	20	0	189M	6896	5108	S	0.0	0.3	0:00.05	php-fpm: pool www
93	root	20	0	2456	40	0	S	0.0	0.0	0:00.00	/tmp/gnss3/bin/udhcpc -s /gn
6867	root	20	0	188M	2848	1540	S	0.0	0.1	0:01.88	php-fpm: master process (/e
1	root	20	0	4000	2644	2392	S	0.0	0.1	0:00.06	bash
85	root	20	0	2456	0	0	S	0.0	0.0	0:00.01	/gnss3/bin/busybox sh -c whi
91	root	20	0	2456	0	0	S	0.0	0.0	0:00.00	/gnss3/bin/busybox sh
7490	root	20	0	61592	1720	48	S	0.0	0.1	0:00.00	nginx: master process /usr/

F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Nice +F9Kill F10Quit

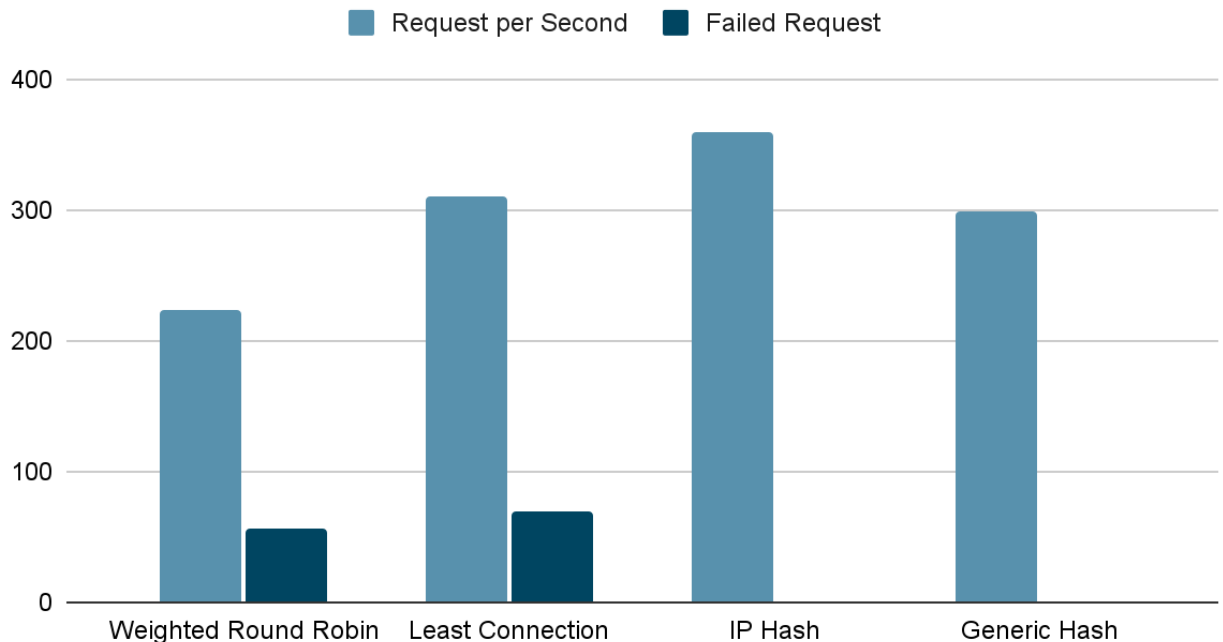
```
CPU[||||| 10.2%] Tasks: 10, 0 thr; 1 running
Mem[||||| 711M/1.92G] Load average: 0.60 0.91 0.72
Swap[||| 126M/2.00G] Uptime: 22:47:21
```

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
6867	root	20	0	180M	2792	1524	S	0.0	0.1	0:01.90	php-fpm: master process (/e
7444	root	20	0	4824	3152	2684	R	0.0	0.2	0:00.30	htop
6869	www-data	20	0	189M	6992	5264	S	0.0	0.3	0:00.05	php-fpm: pool www
7427	www-data	20	0	62212	6800	4776	S	0.0	0.3	0:00.08	nginx: worker process
6868	www-data	20	0	189M	7972	6080	S	0.0	0.4	0:00.14	php-fpm: pool www
93	root	20	0	2456	1064	1024	S	0.0	0.1	0:00.00	/tmp/gnss3/bin/udhcpc -s /gn
1	root	20	0	4000	2036	1772	S	0.0	0.1	0:00.04	bash
85	root	20	0	2456	0	0	S	0.0	0.0	0:00.01	/gnss3/bin/busybox sh -c whi
91	root	20	0	2456	0	0	S	0.0	0.0	0:00.00	/gnss3/bin/busybox sh
7425	root	20	0	61592	1720	40	S	0.0	0.1	0:00.00	nginx: master process /usr/

F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Nice +F9Kill F10Quit

II. Grafik

Perbandingan Algoritma Load Balancer



III. Analisis

Dapat dilihat dari grafik bahwa pengujian terefisien terdapat ketika load balancer menggunakan algoritma IP hash. Hal tersebut dikarenakan pembagian kerja pada worker node disesuaikan dengan hash dari IP yang melakukan request. Pencarian hash tersebut tentu akan lebih cepat daripada perhitungan worker node mana yang paling sedikit diakses (least connection). Sedangkan jika menggunakan weighted round robin, pembagian kerja worker node tidak akan efektif, karena sulit untuk menyesuaikan dengan resources dari worker node itu sendiri. Mirip dengan IP hash, generic hash yang digunakan adalah hash dari request url, yang tentu saja lebih panjang dari pada IP. Sehingga untuk kasus ini, algoritma load balancer paling efisien adalah menggunakan IP hash.

Nomor 9

I. Hasil Testing

a. 3 Worker

\$ ab -n 100 -c 10 -A netics:ajka01 http://channel.a01.com/	
Server Software:	nginx/1.14.2
Server Hostname:	channel.a01.com
Server Port:	80
Document Path:	/
Document Length:	627 bytes
Concurrency Level:	10
Time taken for tests:	0.350 seconds
Complete requests:	100
Failed requests:	33
(Connect: 0, Receive: 0, Length: 33, Exceptions: 0)	
Total transferred:	76367 bytes
HTML transferred:	62667 bytes

Requests per second: 285.92 [# /sec] (mean)
Time per request: 34.975 [ms] (mean)
Time per request: 3.498 [ms] (mean, across all concurrent requests)
Transfer rate: 213.23 [Kbytes/sec] received

Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	7 3.6	6	18
Processing:	3	27 16.6	25	145
Waiting:	2	27 16.5	25	143
Total:	3	34 16.7	33	147

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

50%	33
66%	41
75%	44
80%	45
90%	50
95%	58
98%	61
99%	147
100%	147 (longest request)

```
(Connect: 0, Receive: 0, Length: 49, Exceptions: 0)
Total transferred: 76351 bytes
HTML transferred: 62651 bytes
Requests per second: 144.71 [# /sec] (mean)
Time per request: 69.103 [ms] (mean)
Time per request: 6.910 [ms] (mean, across all concurrent requests)
Transfer rate: 107.90 [Kbytes/sec] received

Connection Times (ms)
min mean[+/-sd] median max
Connect: 0 11 12.0 7 79
Processing: 6 55 77.0 25 683
Waiting: 5 54 77.1 25 683
Total: 7 66 78.6 40 685

Percentage of the requests served within a certain time (ms)
50% 40
66% 60
75% 89
80% 102
90% 154
95% 180
98% 208
99% 685
100% 685 (longest request)
root@Richter:~#
```

```
CPU: 6.1% Tasks: 10, 0 thr; 1 running
Mem: 698M/1.92G Load average: 1.13 0.75 0.59
Swap: 126M/2.00G Uptime: 22:42:10

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
6891 www-data 20 0 62316 5072 2988 S 0.8 0.3 0:00.17 nginx: worker process
6889 root 20 0 189M 1552 738 S 0.0 0.1 0:01.88 php-fpm: master process (/etc/php/7.3
7337 root 20 0 4864 3264 2752 R 0.0 0.2 0:00.95 httpd
6890 www-data 20 0 189M 6880 5432 S 0.0 0.3 0:00.17 php-fpm: pool www
6891 www-data 20 0 189M 5784 4504 S 0.0 0.3 0:00.03 php-fpm: pool www
1 root 20 0 4004 2008 1752 S 0.0 0.1 0:00.05 bash
84 root 20 0 2456 0 0 S 0.0 0.0 0:00.01 /gnss3/bin/busybox sh -c while true; d
89 root 20 0 2456 0 0 S 0.0 0.0 0:00.00 /gnss3/bin/busybox sh
91 root 20 0 2456 48 0 S 0.0 0.0 0:00.05 /tmp/gnss3/bin/udhcpc -s /gnss3/etc/udh
6889 root 20 0 61592 1676 0 S 0.0 0.1 0:00.00 nginx: master process /usr/sbin/nginx
```

b. 2 Worker

```
$ ab -n 100 -c 10 -A netics:ajka01 http://channel.a01.com/
```

Server Software: nginx/1.14.2
Server Hostname: channel.a01.com
Server Port: 80

Document Path: /
Document Length: 627 bytes

Concurrency Level: 10
Time taken for tests: 0.520 seconds
Complete requests: 100

```
Failed requests:          1
  (Connect: 0, Receive: 0, Length: 1, Exceptions: 0)
Total transferred:      76399 bytes
HTML transferred:      62699 bytes
Requests per second:    192.21 [#/sec] (mean)
Time per request:       52.027 [ms] (mean)
Time per request:       5.203 [ms] (mean, across all concurrent
requests)
Transfer rate:          143.40 [Kbytes/sec] received
```

Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	8 6.9	5	36
Processing:	7	40 50.1	35	510
Waiting:	6	39 50.0	34	509
Total:	7	48 50.5	42	513

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

50%	42
66%	49
75%	59
80%	60
90%	70
95%	81
98%	85
99%	513
100%	513 (longest request)

```
(Connect: 0, Receive: 0, Length: 1, Exceptions: 0)
Total transferred: 76399 bytes
HTML transferred: 62699 bytes
Requests per second: 192.21 [#/sec] (mean)
Time per request: 52.027 [ms] (mean)
Time per request: 5.203 [ms] (mean, across all concurrent requests)
Transfer rate: 143.40 [Kbytes/sec] received

Connection Times (ms)
  min mean[+/-sd] median max
Connect: 0 8 6.9 5 36
Processing: 7 40 50.1 35 510
Waiting: 6 39 50.0 34 509
Total: 7 48 50.5 42 513

Percentage of the requests served within a certain time (ms)
 50% 42
 66% 49
 75% 59
 80% 60
 90% 70
 95% 81
 98% 85
 99% 513
100% 513 (longest request)
root@Richter:~#

root@lawine:~# htop
root@lawine:~# service nginx stop
[ ok ] Stopping nginx: nginx.
root@lawine:~#

CPU 3.1% Tasks: 10, 0 thr: 1 running
Mem 701M/1.9G Load average: 1.00 0.61 0.53
Swap 126M/2.00G Uptime: 22:41:14

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
7337 root 20 0 4864 3264 2752 R 0.0 0.2 0:00.91 htop
6889 root 20 0 189M 1552 736 S 0.0 0.1 0:01.87 php-fpm: master process (/etc/php/7.3
6911 www-data 20 0 62316 5872 2988 S 0.0 0.3 0:00.14 nginx: worker process
6890 www-data 20 0 189M 6880 5432 S 0.0 0.3 0:00.16 php-fpm: pool www
6891 www-data 20 0 189M 5784 4504 S 0.0 0.3 0:00.03 php-fpm: pool www
1 root 20 0 4004 2008 1752 S 0.0 0.1 0:00.05 bash
84 root 20 0 2456 0 0 S 0.0 0.0 0:00.01 /gnss3/bin/busybox sh -c while true; d
89 root 20 0 2456 0 0 S 0.0 0.0 0:00.00 /gnss3/bin/busybox sh
91 root 20 0 2456 48 0 S 0.0 0.0 0:00.05 /tmp/gnss3/bin/udhcpc -s /gnss3/etc/udh
6989 root 20 0 61592 1676 0 S 0.0 0.1 0:00.00 nginx: master process /usr/sbin/nginx

F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Nice F9Kill F10Quit

CPU 11.1% Tasks: 10, 0 thr: 1 running
Mem 701M/1.9G Load average: 1.00 0.61 0.53
Swap 126M/2.00G Uptime: 22:41:15

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
7427 www-data 20 0 62212 5828 2936 R 0.0 0.3 0:00.01 nginx: worker process
7444 root 20 0 4824 3152 2684 R 0.0 0.2 0:00.01 htop
1 root 20 0 4000 2036 1772 S 0.0 0.1 0:00.04 bash
85 root 20 0 2456 0 0 S 0.0 0.0 0:00.01 /gnss3/bin/busybox sh -c whi
91 root 20 0 2456 0 0 S 0.0 0.0 0:00.00 /gnss3/bin/busybox sh
93 root 20 0 2456 1064 1024 S 0.0 0.1 0:00.05 /tmp/gnss3/bin/udhcpc -s /gn
6867 root 20 0 188M 2792 1524 S 0.0 0.1 0:01.83 php-fpm: master process /e
6868 www-data 20 0 189M 3112 1816 R 0.0 0.2 0:00.00 php-fpm: pool www
6869 www-data 20 0 189M 3112 1816 S 0.0 0.2 0:00.00 php-fpm: pool www
7425 root 20 0 61592 1720 40 S 0.0 0.1 0:00.00 nginx: master process /usr/

F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Nice F9Kill F10Quit
```

c. 1 Worker

```
$ ab -n 100 -c 10 -A netics:ajka01 http://channel.a01.com/
```

```
Server Software:      nginx/1.14.2
Server Hostname:      channel.a01.com
Server Port:          80
```

```
Document Path:        /
Document Length:      627 bytes
```



```
Concurrency Level:      10
Time taken for tests:    0.751 seconds
Complete requests:      100
Failed requests:         0
Total transferred:      76400 bytes
HTML transferred:       62700 bytes
Requests per second:    133.08 [#/sec] (mean)
Time per request:       75.143 [ms] (mean)
Time per request:       7.514 [ms] (mean, across all concurrent
requests)
Transfer rate:          99.29 [Kbytes/sec] received
```

Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	6 4.2	7	13
Processing:	12	31 40.1	28	414
Waiting:	12	31 39.9	27	413
Total:	13	37 40.0	34	415

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

50%	34
66%	39
75%	42
80%	43
90%	44
95%	46
98%	110
99%	415
100%	415 (longest request)

```
Failed requests:      0
Total transferred:    76400 bytes
HTML transferred:     62700 bytes
Requests per second:  293.99 [#/sec] (mean)
Time per request:     34.014 [ms] (mean)
Time per request:     3.401 [ms] (mean, across all concurrent requests)
Transfer rate:        219.35 [Kbytes/sec] received
```

```
Connection Times (ms)
min mean[+/-sd] median max
Connect:    1  7  4.3  6  17
Processing: 11 25  8.5  24  42
Waiting:    10 25  8.5  24  42
Total:      14 32  9.8  34  47
```

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

50%	34
66%	39
75%	41
80%	43
90%	43
95%	44
98%	46
99%	47
100%	47 (longest request)

root@Richter:~#

```
root@Lawine:~# htop
root@Lawine:~# service nginx stop
[ ok ] Stopping nginx: nginx.
root@Lawine:~#
```

```
CPU 15.4% Tasks: 10, 0 thr: 1 running
Mem 702M/1.9G Load average: 0.54 0.44 0.48
Swap 126M/2.00G Uptime: 22:39:56
```

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
6911	www-data	20	0	62316	5072	2988	S	2.6	0.3	0:00.14	nginx: worker process
6890	www-data	20	0	189M	6800	5432	S	0.9	0.3	0:00.15	php-fpm: pool www
6891	www-data	20	0	189M	5784	4504	S	0.9	0.3	0:00.03	php-fpm: pool www
7337	root	20	0	4864	3264	2752	R	0.0	0.2	0:00.85	htop
6889	root	20	0	188M	1552	736	S	0.0	0.1	0:01.86	php-fpm: master process (/etc/php/7.3
1	root	20	0	4004	2808	1752	S	0.0	0.1	0:00.05	bash
84	root	20	0	2456	0	0	S	0.0	0.0	0:00.01	/gnss3/bin/busybox sh -c while true; d
89	root	20	0	2456	0	0	S	0.0	0.0	0:00.00	/gnss3/bin/busybox sh
91	root	20	0	2456	48	0	S	0.0	0.0	0:00.05	/tmp/gnss3/bin/udhcpc -s /gnss3/etc/udh
6909	root	20	0	61592	1676	0	S	0.0	0.1	0:00.00	nginx: master process /usr/sbin/nginx

F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Nice F9Kill F10Quit

```
root@Linie:~# htop
root@Linie:~# service nginx stop
[ ok ] Stopping nginx: nginx.
root@Linie:~#
```

II. Grafik

Perbandingan Jumlah Worker



Nomor 15

cred.json	<pre>{ "username": "testing", "password": "pass123" }</pre>
Request	<pre>curl -X POST -H "Content-Type: application/json" -d @cred.json canyon.a01.com/api/auth/register</pre>
Response Success	<pre>{ "user": { "username": "testing", "updated_at": "2023-11-16T12:05:39.000000Z", "created_at": "2023-11-16T12:05:39.000000Z", "id": 1 }, "token": "eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJpc3MiOiJodHRwOi8vd29ya2V yL2FwaS9hdXRoL3JlZ2lzdGVyIiwiaWF0IjoxNzAwMTM2MzM5LCJleHAiOjE3MDAx Mzk5MzksIm5iZiI6MTcwMDEzNjMzOSwianRpIjoieYmRvT29lek50b2F5cjNHQiIsI nN1YiI6IjEiLCJwcnYiOiIyM2JkNW40TQ5ZjYwMGFkYjM5ZTcwMWM0MDA4NzJkYj dhNTk3NmY3In0.V-E574v6dev1IS0NrBfLNvOqsj7SfPx9l0NaDuvq8UQ" }</pre>
Response Error	<pre>{ "username": ["The username has already been taken."] }</pre>
Stress Test	<pre>ab -n 100 -c 10 -p cred.json -T "application/json" -H "Accept: application/json" -H "Content-Type: application/json" http://canyon.a01.com/api/auth/register</pre>

Server Software: nginx/1.14.2
Server Hostname: canyon.a01.com
Server Port: 80

Document Path: /api/auth/register
Document Length: 451 bytes

Concurrency Level: 10
Time taken for tests: 3.301 seconds
Complete requests: 100
Failed requests: 99
(Connect: 0, Receive: 0, Length: 99, Exceptions: 0)
Non-2xx responses: 99
Total transferred: 34894 bytes
Total body sent: 24800
HTML transferred: 5698 bytes
Requests per second: 30.30 [#/sec] (mean)
Time per request: 330.061 [ms] (mean)
Time per request: 33.006 [ms] (mean, across all concurrent requests)
Transfer rate: 10.32 [Kbytes/sec] received
7.34 kb/s sent
17.66 kb/s total

Connection Times (ms)

	min	mean	mean[+/-sd]	median	max
Connect:	0	1	2.2	0	12
Processing:	143	303	76.6	295	558
Waiting:	143	303	76.4	295	558
Total:	144	305	76.5	295	558

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

50%	295
66%	330
75%	339
80%	347
90%	388
95%	470
98%	537
99%	558
100%	558 (longest request)

```

CPU: [|||||] 79.3% Tasks: 27, 0 thr; 1 running
Mem: [|||||] [1724M/1.92G] Load average: 0.51 0.63 0.99
Swap: [|||] 126M/2.00G Uptime: 1 day, 81:12:27

  PID USER      PRI  NI  VIRT   RES   SHR  CPU MEMK  TIME+  Command
17985 www-data  20   0  2438 37066 26396 S  9.8 1.8 0:00:32 php-fpm: pool www
17984 www-data  20   0  2438 37066 26396 S  8.5 1.8 0:00:46 php-fpm: pool www
17987 www-data  20   0  2388 35132 26396 S  8.5 1.7 0:00:12 php-fpm: pool www
17906 www-data  20   0  2388 34220 26843 S  8.5 1.7 0:00:00 php-fpm: pool www
17947 www-data  20   0  62228 6736 4708 S  1.2 0.3 0:00:09 nginx: worker process
17893 root       20   0  2388 18880 6180 S  1.2 0.5 0:00:14 php-fpm: master process (/etc
17964 root       20   0  5196 3664 2784 R  0.0 0.2 0:00:99 httpd
17905 root       20   0  3996 3128 2672 S  0.0 0.2 0:00:08 bash
643 root       20   0  2456 0 0 S 0.0 0.0 0:00:00 /usr/bin/busybox sh -c whi
674 root       20   0  2456 0 0 S 0.0 0.0 0:00:00 /usr/bin/busybox sh
5186 root       20   0  2456 0 0 S 0.0 0.0 0:00:01 /tmp/gns3/bin/udhcpc -s /gn
17894 www-data  20   0  2388 9792 5072 S  0.0 0.5 0:00:00 php-fpm: trial 1
17895 www-data  20   0  2388 9792 5072 S  0.0 0.5 0:00:00 php-fpm: trial 1
17896 www-data  20   0  2388 9792 5072 S  0.0 0.5 0:00:00 php-fpm: trial 2
17897 www-data  20   0  2388 9792 5072 S  0.0 0.5 0:00:00 php-fpm: trial 2
17898 www-data  20   0  2388 9792 5072 S  0.0 0.5 0:00:00 php-fpm: trial 2
17899 www-data  20   0  2388 9792 5072 S  0.0 0.5 0:00:00 php-fpm: trial 2
17900 www-data  20   0  2388 9792 5072 S  0.0 0.5 0:00:00 php-fpm: trial 2
17901 www-data  20   0  2388 9792 5072 S  0.0 0.5 0:00:00 php-fpm: trial 3

```

cred.json	{ "username": "testing", "password": "pass123" }
Request	curl -X POST -H "Content-Type: application/json" -d @cred.json canyon.a01.com/api/auth/login
Response Success	{ "token": "eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJpc3MiOiJodHRwOi8vd29ya2VyL2FwaS9hdXR0L2xvZ2luIiwiaWF0IjoxNzAwMTM3NTUzLCJleHAiOiJE3MDAxNDExNTMsIm5iZiI6MTcwMDEzNzU1MywianRpIjoiUUZCVHY0UU1Va1VEEdXR2eSIsInN1YiI6IjQiLCJwcnYiOiIyM2JkNWM4OTQ5ZjYwMGFkYjM5ZTcwMWM0MDA4NzJkYjdhNTk3NmY3In0.rioyGhPAGEPNleeXlIwo14LB9erewybZWb0e20YY-28" }
Stress Test	ab -n 100 -c 10 -p cred.json -T "application/json" -H "Accept: application/json" -H "Content-Type: application/json" http://canyon.a01.com/api/auth/login
Server Software: nginx/1.14.2 Server Hostname: canyon.a01.com Server Port: 80 Document Path: /api/auth/login Document Length: 324 bytes Concurrency Level: 10 Time taken for tests: 14.865 seconds Complete requests: 100 Failed requests: 20 (Connect: 0, Receive: 0, Length: 20, Exceptions: 0) Non-2xx responses: 20 Total transferred: 237218 bytes	

Connection Times (ms)

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

50%	1694
66%	1830
75%	1893
80%	1955
90%	2072
95%	2124
98%	2361
99%	2773
100%	2773 (longest request)

```
HTML transferred:      207700 bytes
Requests per second:   6.73 [#/sec] (mean)
Time per request:      1486.540 [ms] (mean)
Time per request:      148.654 [ms] (mean, across all concurrent requests)
Transfer rate:         15.58 [Kbytes/sec] received
                       1.61 kb/s sent
                       17.19 kb/s total
```

Connection Times (ms)				
	min	mean[+/-sd]	median	max
Connect:	0	2 6.1	0	42
Processing:	103	1454 709.8	1694	2769
Waiting:	53	1448 720.9	1693	2769
Total:	103	1456 708.1	1694	2773

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

```
50% 1694
66% 1830
75% 1893
80% 1955
90% 2072
95% 2124
98% 2361
99% 2773
100% 2773 (longest request)
root@Stark:~#
```

```
CPU[||||| 98.4%] Tasks: 27, 0 thr; 1 running
Mem[||||| 733M/1.92G] Load average: 4.60 1.57 1.22
Swp[||| 126M/2.00G] Uptime: 1 day, 01:15:53
```

PID	USER	PRIO	NI	VIRT	RES	SHR	S	CPUS	MEM	TIME+	Command
17989	www-data	20	0	2438	38380	27432	S	21.0	1.9	0:02.24	php-fpm: pool www
17981	www-data	20	0	2438	38428	27432	S	17.7	1.9	0:02.11	php-fpm: pool www
17992	www-data	20	0	2431	34448	27436	S	17.7	1.8	0:02.07	php-fpm: pool www
17993	www-data	20	0	2438	38392	27432	S	21.0	1.9	0:02.24	php-fpm: pool www
17991	www-data	20	0	2438	36256	27440	S	0.0	1.8	0:00.66	php-fpm: pool www
17939	www-data	20	0	62228	6740	4696	S	0.0	0.3	0:00.09	nginx: worker process
17956	root	20	0	4912	3264	27720	R	0.0	0.2	0:01.26	htop
17957	root	20	0	4912	3264	27720	R	0.0	0.2	0:01.26	htop
1	root	20	0	4000	3036	2632	S	0.0	0.2	0:00.07	bash
437	root	20	0	2456	0	0	S	0.0	0.0	0:00.02	gnss/bin/busybox sh -c whi
455	root	20	0	2456	0	0	S	0.0	0.0	0:00.00	gnss/bin/busybox sh
5146	root	20	0	2456	0	0	S	0.0	0.0	0:00.00	gnss/bin/busybox sh -c /gn
17886	www-data	20	0	238M	9920	5140	S	0.0	0.5	0:00.00	php-fpm: pool trial_1
17887	www-data	20	0	238M	9920	5140	S	0.0	0.5	0:00.00	php-fpm: pool trial_1
17888	www-data	20	0	238M	9920	5140	S	0.0	0.5	0:00.00	php-fpm: pool trial_2
17889	www-data	20	0	238M	9920	5140	S	0.0	0.5	0:00.00	php-fpm: pool trial_2
17890	www-data	20	0	238M	9920	5140	S	0.0	0.5	0:00.00	php-fpm: pool trial_2
17893	www-data	20	0	238M	9920	5140	S	0.0	0.5	0:00.00	php-fpm: pool trial_3
17894	www-data	20	0	238M	9920	5140	S	0.0	0.5	0:00.00	php-fpm: pool trial_3

```
CPU[|||||||||||||||||||||||||||||95.2%] Tasks: 27, 0 thr; 1 running
Mem[||||||||||||||||||||||||||733M/1.92G] Load average: 4.60 1.57 1.22
Swp[|||] 126M/2.00G Uptime: 1 day, 01:15:53
```

PID	USER	PRI	0	WIRT	RES	SHR	S	CPUS	MEM%	TIME+	Command
17997	www-data	20	0	2419	36516	27548	5	17.1	0.81	0:91.93	php-fpm: pool www
17998	www-data	20	0	2419	36516	27548	5	12.7	1.8	0:00.84	php-fpm: pool www
17999	www-data	20	0	2419	36528	27852	5	11.1	1.8	0:00.74	php-fpm: pool www
17998	www-data	20	0	2419	36532	27848	5	12.7	1.8	0:00.74	php-fpm: pool www
17998	www-data	20	0	2419	37128	28064	6	7.9	1.8	0:02.31	php-fpm: pool www
17964	root	20	0	5196	3646	2784	8	4.8	0.2	0:01.21	htop
17947		20	0	62228	6736	4708	5	1.6	0.3	0:00.12	nginx: worker process
17993	root	20	0	29936	3128	2672	5	0.0	0.2	0:00.08	bash
643	root	20	0	2456	0	0	0	0.0	0.0	0:00.02	/gnss/bin/busybox sh -c whoami
5186	root	20	0	2456	0	0	0	0.0	0.0	0:00.01	/gnss/bin/busybox sh -c whoami
5186	root	20	0	2456	0	0	0	0.0	0.0	0:00.01	/gnss/bin/busybox sh -c whoami
17894	www-data	20	0	2389	9792	5072	5	0.0	0.5	0:00.00	php-fpm: pool trial_1
17895	www-data	20	0	2389	9792	5072	5	0.0	0.5	0:00.00	php-fpm: pool trial_1
17896	www-data	20	0	2389	9792	5072	5	0.0	0.5	0:00.00	php-fpm: pool trial_1
17897	www-data	20	0	2389	9792	5072	5	0.0	0.5	0:00.00	php-fpm: pool trial_2
17898	www-data	20	0	2389	9792	5072	5	0.0	0.5	0:00.00	php-fpm: pool trial_2
17899	www-data	20	0	2389	9792	5072	5	0.0	0.5	0:00.00	php-fpm: pool trial_2
17900	www-data	20	0	2389	9792	5072	5	0.0	0.5	0:00.00	php-fpm: pool trial_3

```
CPU[|||||||||||||||||||||||||||||95.2%] Tasks: 27, 0 thr; 1 running
Mem[|||||||||||||||||||||||||733M/1.92G] Load average: 4.60 1.57 1.22
Swp[|||||126M/2.00G] Uptime: 1 day, 01:15:53
```

PID	USER	PRI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522</
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Nomor 17

```
Request curl -X GET -H "Content-Type: application/json" -H
"Authorization: Bearer
eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJpc3MiOiJodHRwOi8vd29ya2Vy
L2FwaS9hdXR0L2xvZ2luIiwiaWF0IjoxNzAwMTM3NTUzLCJleHAiOiJlM0M0MDExN
TMsIm5iOiJlM0M0MDExNzU1MywianRpIjoiUUZCVHY0UUU1Va1VEeXR2eSIsInN1Yi
I6IjQ1L2JwcnYiOiIyM2JkNWw4OTQ5ZjYwMGFkYjM5ZTcwMWM0MDA4NzJkYjdhNTk
3NmY3In0.rioyGhPAGEPNleeXlIwo14LB9erewybZWb0e20YY-28" -d
@cred.json canyon.a01.com/api/me
```

Response Success	{ "id": 4, "username": "testing", "created_at": "2023-11-16T12:25:31.000000Z", "updated_at": "2023-11-16T12:25:31.000000Z" }
Stress Test	ab -n 100 -c 10 -H "Content-Type: application/json" -H "Authorization: Bearer eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJpc3MiOiJodHRwOi8vd29ya2VyL2FwaS9hdXRoL2xvZ2luIiwiaWF0IjoxNzAwMTM3NTUzLCJleHAiOiJlMDAxNDExNTMsIm5iZiI6MTcwMDEzNzU1MywianRpIjoiUUZCVHY0UUU1Va1VEEdXR2eSIsInN1YiI6IjQiLCJwcnYiOiIyM2JkNW40OTQ5ZjYwMGFkYjM5ZTcwMWM0MDA4NzJkYjdhNTk3NmY3In0.rioyGhPAGEPNleeXlIwo14LB9erewybZWb0e20YY-28" http://canyon.a01.com/api/me
Server Software: nginx/1.14.2 Server Hostname: canyon.a01.com Server Port: 80 Document Path: /api/me Document Length: 115 bytes Concurrency Level: 10 Time taken for tests: 3.093 seconds Complete requests: 100 Failed requests: 0 Total transferred: 39800 bytes HTML transferred: 11500 bytes Requests per second: 32.33 [#/sec] (mean) Time per request: 309.331 [ms] (mean) Time per request: 30.933 [ms] (mean, across all concurrent requests) Transfer rate: 12.56 [Kbytes/sec] received Connection Times (ms) min mean[+/-sd] median max Connect: 0 1 2.0 0 13 Processing: 75 296 85.6 283 593 Waiting: 73 296 85.6 283 592 Total: 76 297 85.9 285 593 Percentage of the requests served within a certain time (ms) 50% 285 66% 311 75% 333 80% 344 90% 405 95% 499 98% 553 99% 593 100% 593 (longest request)	

```

Failed requests: 0
Total transferred: 39880 bytes
HTML transferred: 11500 bytes
Requests per second: 32.33 [/sec] (mean)
Time per request: 389.334 [ms] (mean)
Time per request: 30.933 [ms] (mean, across all concurrent requests)
Transfer rate: 12.56 [Kbytes/sec] received

Connection Times (ms)
      min mean [+/-sd] median max
Connect: 0 1 2.0 0 13
Processing: 75 296 8.6 283 593
Waiting: 73 296 8.5 592
Total: 76 297 85.9 285 593

Percentage of the requests served within a certain time (ms)
 50% 285
 66% 311
 75% 333
 80% 344
 90% 405
 95% 499
 98% 553
 99% 593
100% 593 (longest request)
root@Stark:~#

CPU|||||||||||||||||||||||||||||||||100.0%| Tasks: 27, 0 thr: 1 running
Mem|||||||||||||||||||||||||||||1729M/1.92G| Load average: 1.42 0.77 0.89
Swap|||||||||||||||||||||||||||||126M/2.00G| Uptime: 1 day, 01:21:34

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
17999 www-data 20 0 243M 39024 28016 R 10.5 1.9 0:00.97 php-fpm: pool www
17998 www-data 20 0 243M 38852 27860 R 10.5 1.9 0:01.05 php-fpm: pool www
10007 www-data 20 0 243M 35808 26766 S 10.5 1.0 0:00.17 php-fpm: pool www
17997 www-data 20 0 243M 35804 27564 R 9.2 1.9 0:02.10 php-fpm: pool www
18008 www-data 20 0 240M 35548 26788 R 7.9 1.8 0:00.06 php-fpm: pool www
17947 www-data 20 0 62228 6736 4708 S 1.3 0.3 0:00.14 nginx: worker process
17994 root 20 0 4196 3264 2728 R 0.0 0.2 0:01.72 php-fpm: master process (/e
17893 root 20 0 238M 18880 6180 S 0.0 0.5 0:00.21 php-fpm: master process (/e
1 root 20 0 3996 1328 2672 S 0.0 0.2 0:00.88 bash
643 root 20 0 2456 0 0 0.0 0.0 0:00.02 /tmp/gns3/bin/busybox sh -c whi
674 root 20 0 2456 0 0 0.0 0.0 0:00.00 /tmp/gns3/bin/busybox sh
5186 root 20 0 2456 0 0 0.0 0.0 0:00.01 /tmp/gns3/bin/udhcpd -s /gn
17894 www-data 20 0 238M 9792 5072 S 0.0 0.5 0:00.00 php-fpm: pool trial_1
17895 www-data 20 0 238M 9792 5072 S 0.0 0.5 0:00.00 php-fpm: pool trial_1
17896 www-data 20 0 238M 9792 5072 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
17897 www-data 20 0 238M 9792 5072 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
17898 www-data 20 0 238M 9792 5072 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
17899 www-data 20 0 238M 9792 5072 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
17900 www-data 20 0 238M 9792 5072 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
F|Help F|Setup F|Search F|Filter F|Free F|SortBy F|Vice F|Vice F|Kill F|Quit

CPU|||||||||||||||||||||||||||||||||100.0%| Tasks: 27, 0 thr: 1 running
Mem|||||||||||||||||||||||||||||1729M/1.92G| Load average: 1.42 0.77 0.89
Swap|||||||||||||||||||||||||||||126M/2.00G| Uptime: 1 day, 01:21:34

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
18000 www-data 20 0 242M 37136 26708 R 12.0 1.8 0:00.14 php-fpm: pool www
17991 www-data 20 0 243M 38920 27896 R 10.7 1.9 0:00.89 php-fpm: pool www
17992 www-data 20 0 243M 38492 27448 R 9.2 1.9 0:00.83 php-fpm: pool www
17990 www-data 20 0 243M 38604 27444 S 9.3 1.9 0:01.95 php-fpm: pool www
18001 www-data 20 0 240M 35528 26788 S 9.3 1.8 0:00.07 php-fpm: pool www
17939 www-data 20 0 62228 6736 4696 S 1.3 0.3 0:00.10 nginx: worker process
17898 root 20 0 238M 18920 6180 S 0.0 0.5 0:00.22 php-fpm: master process (/e
17956 root 20 0 4912 3264 2728 R 0.0 0.2 0:01.72 php
1 root 20 0 4000 3086 2632 S 0.0 0.2 0:00.67 bash
437 root 20 0 2456 0 0 0.0 0.0 0:00.02 /tmp/gns3/bin/busybox sh -c whi
438 root 20 0 2456 0 0 0.0 0.0 0:00.00 /tmp/gns3/bin/busybox sh
5186 root 20 0 2456 0 0 0.0 0.0 0:00.01 /tmp/gns3/bin/udhcpd -s /gn
17886 www-data 20 0 238M 9920 5140 S 0.0 0.5 0:00.00 php-fpm: pool trial_1
17887 www-data 20 0 238M 9920 5140 S 0.0 0.5 0:00.00 php-fpm: pool trial_1
17888 www-data 20 0 238M 9920 5140 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
17889 www-data 20 0 238M 9920 5140 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
17890 www-data 20 0 238M 9920 5140 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
17891 www-data 20 0 238M 9920 5140 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
17892 www-data 20 0 238M 9920 5140 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
17893 www-data 20 0 238M 9920 5140 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
F|Help F|Setup F|Search F|Filter F|Free F|SortBy F|Vice F|Vice F|Kill F|Quit

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
18045 www-data 20 0 243M 38412 27392 S 10.8 1.9 0:01.84 php-fpm: pool www
18055 www-data 20 0 242M 39121 26512 S 10.8 1.8 0:00.14 php-fpm: pool www
18046 www-data 20 0 242M 35300 27392 S 9.6 1.0 0:01.01 php-fpm: pool www
18047 www-data 20 0 243M 38944 27904 S 8.4 1.9 0:00.74 php-fpm: pool www
18056 www-data 20 0 240M 35292 26508 S 2.4 1.8 0:00.02 php-fpm: pool www
17994 www-data 20 0 62228 6652 4688 S 1.2 0.3 0:00.11 nginx: worker process
17992 root 20 0 4912 3264 2728 R 0.0 0.2 0:01.72 php
17941 root 20 0 238M 10772 6040 S 0.0 0.5 0:00.18 php-fpm: master process (/e
5242 root 20 0 2456 1288 1256 S 0.0 0.1 0:00.02 /tmp/gns3/bin/udhcpd -s /gn
1 root 20 0 3996 3096 2620 S 0.0 0.2 0:00.88 bash
437 root 20 0 2456 0 0 0.0 0.0 0:00.02 /tmp/gns3/bin/busybox sh -c whi
356 root 20 0 2456 0 0 0.0 0.0 0:00.00 /tmp/gns3/bin/busybox sh
17942 www-data 20 0 238M 9928 5176 S 0.0 0.5 0:00.00 php-fpm: pool trial_1
17943 www-data 20 0 238M 9928 5176 S 0.0 0.5 0:00.00 php-fpm: pool trial_1
17944 www-data 20 0 238M 9928 5176 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
17945 www-data 20 0 238M 9928 5176 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
17946 www-data 20 0 238M 9928 5176 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
17947 www-data 20 0 238M 9928 5176 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
17948 www-data 20 0 238M 9928 5176 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
F|Help F|Setup F|Search F|Filter F|Free F|SortBy F|Vice F|Vice F|Kill F|Quit

```

Nomor 19

I. Hasil Testing

a. Percobaan 1

```
pm.max_children = 5
pm.start_servers = 2
pm.min_spare_servers = 1
pm.max_spare_servers = 3
```

```
ab -n 100 -c 10 -H "Content-Type: application/json" -H
"Authorization: Bearer
eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJpc3MiOiJodHRwOi8vd29ya2VyL
2FwaS9hdXRoL2xvZ2luIiwiaWF0IjoxNzAwMTM3NTUzLCJleHAiOiJlM0M0NDExNTM
sIm5iOiI6MTcwMDEzNzU1MywianRpIjojUzZCVHY0U1Va1VEEdXR2eSIsInN1YiI6I
jQjLCJwcnYiOiIyM2JkNWw0MTQ5ZjYwMGFkYjM5ZTcwMWM0MDA4NzJkYjdNTk3NmY
3In0.rioyGhPAGEPNleeXlIwo14LB9erewybZWb0e20YY-28"
http://canyon.a01.com/api/me
```

```
Server Software:      nginx/1.14.2
Server Hostname:      canyon.a01.com
Server Port:          80
```

```
Document Path:      /api/me
Document Length:    115 bytes
```

```

Concurrency Level:      10
Time taken for tests:   4.672 seconds
Complete requests:      100
Failed requests:        0
Total transferred:      39800 bytes
HTML transferred:       11500 bytes
Requests per second:    21.40 [#/sec] (mean)
Time per request:       467.231 [ms] (mean)
Time per request:       46.723 [ms] (mean, across all concurrent
requests)
Transfer rate:          8.32 [Kbytes/sec] received

```

Connection Times (ms)

Percentage of the requests served within a certain time (ms)	
50%	346
66%	409
75%	438
80%	495
90%	1361
95%	1467
98%	1555
99%	1657
100%	1657 (longest request)

b. Percobaan 2

```
ab -n 100 -c 10 -H "Content-Type: application/json" -H
"Authorization: Bearer
eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJpc3MiOiJodHRwO
2FwaS9hdXRol2xvZ2luIiwiaWF0IjoxNzAwMTM3NTUzLCJleHAiOiJl
sIm5iZiI6MTcwMDEzNzU1MywianRpIjojUzZCVHY0UU1Va1VEedXR2e
jQjLCJwcnYiOiIyMzJkNWw0MTQ5ZjYwMGFkYjM5ZTcwMWM0MDA4NzJ
3In0.rioyGhPAGEPNleeXlIwo14LB9erewybZWb0e20YY-28"
http://canyon.a01.com/api/me
```

```
Server Software:      nginx/1.14.2
Server Hostname:      canyon.a01.com
Server Port:          80

Document Path:        /api/me
```


Document Length: 115 bytes

Concurrency Level: 10

Time taken for tests: 5.101 seconds

Complete requests: 100

Failed requests: 0

Total transferred: 39800 bytes

HTML transferred: 11500 bytes

Requests per second: 19.60 [#/sec] (mean)

Time per request: 510.078 [ms] (mean)

Time per request: 51.008 [ms] (mean, across all concurrent requests)

Transfer rate: 7.62 [Kbytes/sec] received

Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	1 2.9	0	21
Processing:	43	456 549.2	163	2251
Waiting:	43	456 549.1	163	2251
Total:	43	458 550.2	163	2252

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

50%	163
66%	512
75%	677
80%	761
90%	1265
95%	1899
98%	2132
99%	2252
100%	2252 (longest request)

```

Failed requests: 0
Total transferred: 39800 bytes
HTML transferred: 11500 bytes
Requests per second: 19.60 [#sec] (mean)
Time per request: 510.078 [ms] (mean)
Time per request: 51.008 [ms] (mean, across all concurrent requests)
Transfer rate: 7.62 [Kbytes/sec] received

Connection Times (ms)
min mean[+/-sd] median max
Connect: 0 1 2.9 0 21
Processing: 43 456 549.2 163 2251
Waiting: 43 456 549.1 163 2251
Total: 43 458 550.2 163 2252

Percentage of the requests served within a certain time (ms)
50% 163
66% 512
75% 677
80% 761
90% 1265
95% 1899
98% 2132
99% 2252
100% 2252 (longest request)
root@start:~#

CPU: [|||||] [100.0%] Tasks: 30, 0 thr; 1 running
Mem: [|||||] [717M/1.92G] Load average: 1.97 1.25 1.10
Swap: [|||||] [136M/2.00G] Uptime: 1 day, 01:38:25

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
6 0 0 3M 37200 26900 R 6.5 1.8 0:00.03 php-fpm: pool trial_2
7 0 0 8484 26964 R 6 9 24 0:00.01 nginx: worker process
24 0 0 21 4 5.2 1.9 24 0:00.01 php-fpm: pool trial_2
4 0 0 16 26900 R 5.2 23 0:00.01 php-fpm: pool trial_2
4 0 0 0M 3671 5 5 0:00.00 php-fpm: pool trial_2
7 0 0 1M 36016 26904 S 5.2 1.8 0:00.00 php-fpm: pool trial_2
18474 www-data 20 0 241M 35916 26264 R 3.9 1.8 0:00.03 php-fpm: pool trial_2
18475 www-data 20 0 240M 35888 26264 R 3.9 1.8 0:00.03 php-fpm: pool trial_2
18453 www-data 20 0 62348 6940 4832 S 1.3 0.3 0:00.01 nginx: worker process
18478 root@start 20 0 5196 3664 2780 R 1.3 0.2 0:00.02 httopfpm: pool trial_2
18476 www-data 20 0 238M 24592 17660 R 1.3 1.2 0:00.01 php-fpm: pool trial_2
18409 www-data 20 0 238M 10824 6200 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18410 www-data 20 0 238M 10828 5188 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18411 www-data 20 0 238M 10828 5188 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18412 www-data 20 0 238M 10828 5188 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18413 www-data 20 0 238M 10828 5188 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18414 www-data 20 0 238M 10828 5188 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18415 www-data 20 0 238M 10828 5188 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Ice F9Kill F10Quit

CPU: [|||||] [100.0%] Tasks: 24, 0 thr; 1 running
Mem: [|||||] [717M/1.92G] Load average: 1.97 1.25 1.10
Swap: [|||||] [136M/2.00G] Uptime: 1 day, 01:38:25

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
58 0 0 3M 38428 26684 S 10.5 1.9 0:00.00 php-fpm: pool trial_2
59 0 0 3M 38092 26596 R 7.9 1.9 24 0:00.00 php-fpm: pool trial_2
62 0 0 3M 37052 26816 S 6.6 1.8 22 0:00.00 php-fpm: pool trial_2
18624 www-data 20 0 243M 36820 26624 S 5.3 1.8 0:00.01 php-fpm: pool trial_2
18557 www-data 20 0 238M 36988 26684 S 5.3 1.8 0:00.02 php-fpm: pool trial_2
18625 www-data 20 0 240M 35636 26020 S 5.3 1.8 0:00.09 php-fpm: pool trial_2
18626 www-data 20 0 240M 35640 26024 S 5.3 1.8 0:00.09 php-fpm: pool trial_2
18606 www-data 20 0 62228 6740 4688 S 1.3 0.3 0:00.01 nginx: worker process
1 root 20 0 3996 2908 2620 S 0.0 0.1 0:00.00 bash
339 root 20 0 2456 0 0 0:00.00 /tmp/gns3/bin/udhcpd -s /gn
1e 1356 rootTERM=vt20 0 2456 0 0 0:00.00 /tmp/gns3/bin/udhcpd -s /gn
s318393 rootc/default0 0 238M 11384 5760 S 0.0 0.6 0:00.01 php-fpm: master process (/e
18401 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18402 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18403 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18404 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18405 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18406 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18410 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18411 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Ice F9Kill F10Quit

CPU: [|||||] [100.0%] Tasks: 27, 0 thr; 1 running
Mem: [|||||] [717M/1.92G] Load average: 1.97 1.25 1.10
Swap: [|||||] [136M/2.00G] Uptime: 1 day, 01:38:25

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
58 0 0 3M 38428 26684 S 10.5 1.9 0:00.00 php-fpm: pool trial_2
59 0 0 3M 38092 26596 R 7.9 1.9 24 0:00.00 php-fpm: pool trial_2
62 0 0 3M 37052 26816 S 6.6 1.8 22 0:00.00 php-fpm: pool trial_2
18624 www-data 20 0 243M 36820 26624 S 5.3 1.8 0:00.01 php-fpm: pool trial_2
18557 www-data 20 0 238M 36988 26684 S 5.3 1.8 0:00.02 php-fpm: pool trial_2
18625 www-data 20 0 240M 35636 26020 S 5.3 1.8 0:00.09 php-fpm: pool trial_2
18626 www-data 20 0 240M 35640 26024 S 5.3 1.8 0:00.09 php-fpm: pool trial_2
18606 www-data 20 0 62228 6740 4688 S 1.3 0.3 0:00.01 nginx: worker process
1 root 20 0 3996 2908 2620 S 0.0 0.1 0:00.00 bash
339 root 20 0 2456 0 0 0:00.00 /tmp/gns3/bin/udhcpd -s /gn
1e 1356 rootTERM=vt20 0 2456 0 0 0:00.00 /tmp/gns3/bin/udhcpd -s /gn
s318393 rootc/default0 0 238M 11384 5760 S 0.0 0.6 0:00.01 php-fpm: master process (/e
18401 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18402 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18403 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18404 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18405 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18406 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18410 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
18411 www-data 20 0 238M 10792 5152 S 0.0 0.5 0:00.00 php-fpm: pool trial_3
F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Ice F9Kill F10Quit

```

c. Percobaan 3

```

pm.max_children = 20
pm.start_servers = 8
pm.min_spare_servers = 4
pm.max_spare_servers = 12

```

```
ab -n 100 -c 10 -H "Content-Type: application/json" -H
"Authorization: Bearer
eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJpc3MiOiJodHRwOi8vd29ya2VyL
2FwaS9hdXRoL2xvZ2luIiwiaWF0IjoxNzAwMTM3NTUzLCJleHAiOiJlMDAxNDExNTM
sIm5iZiI6MTcwMDEzNzU1MywianRpIjoiUUZCVHY0UU1Va1VEEdXR2eSIsInN1YiI6I
jQilCJWcnYiOiIyM2JkNWM4OTQ5ZjYwMGFkYjM5ZTcwMWM0MDA4NzJkYjdhNTk3NmY
3In0.rioyGhPAGEPNleeXlIwo14LB9erewybZWb0e20YY-28"
http://canyon.a01.com/api/me
```

Server Software: nginx/1.14.2
Server Hostname: canyon.a01.com
Server Port: 80

Document Path: /api/me
Document Length: 115 bytes

Concurrency Level: 10
Time taken for tests: 3.142 seconds
Complete requests: 100
Failed requests: 16
(Connect: 0, Receive: 0, Length: 16, Exceptions: 0)
Non-2xx responses: 16
Total transferred: 144841 bytes
HTML transferred: 115564 bytes
Requests per second: 31.83 [#/sec] (mean)
Time per request: 314.152 [ms] (mean)
Time per request: 31.415 [ms] (mean, across all concurrent requests)
Transfer rate: 45.02 [Kbytes/sec] received

Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	1 2.1	0	18
Processing:	51	305 171.1	327	767
Waiting:	48	301 169.6	326	755
Total:	52	305 171.2	327	767

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

50%	327
66%	396
75%	425
80%	444
90%	497
95%	628
98%	695
99%	767
100%	767 (longest request)

```
Non-2xx responses: 16
Total transferred: 144841 bytes
HTML transferred: 115564 bytes
Requests per second: 31.83 [#/sec] (mean)
Time per request: 31.415 [ms] (mean, across all concurrent requests)
Transfer rate: 45.02 [Kbytes/sec] received

Connection Times (ms)
min mean[+/-sd] median max
Connect: 0 1 2.1 0 18
Processing: 51 305 171.1 327 767
Waiting: 48 301 169.6 326 755
Total: 52 305 171.2 327 767

Percentage of the requests served within a certain time (ms)
50% 327
66% 396
75% 425
80% 444
90% 497
95% 620
98% 695
99% 767
100% 767 (longest request)
root@Stark:~#

CPU: [|||||100.0%] Tasks: 25, 0 thr; 1 running
Mem: [|||||792M/1.92G] Load average: 2.22 1.21 1.08
Swap: [|||||130M/2.00G] Uptime: 1 day, 01:37:00

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
18288 www-data 20 0 243M 38312 27056 R 8.0 1.9 0:00.34 php-fpm: pool trial_3
18292 www-data 20 0 243M 37244 25104 S 6.7 1.9 0:00.32 php-fpm: pool trial_3
tc/p287 www-data -fpm.con 243M 38872 27068 S 6.7 1.9 0:00.75 php-fpm: pool trial_3
tc/p3508.0/fpm/php-fpm.con 243M 37348 26104 R 5.3 1.9 0:00.19 php-fpm: pool trial_3
18289 www-data 20 0 243M 38276 27116 R 5.3 1.9 0:00.32 php-fpm: pool trial_3
18290 www-data 20 0 243M 37776 26612 R 5.3 1.9 0:00.32 php-fpm: pool trial_3
18291 www-data 20 0 243M 37208 26104 R 4.0 1.9 0:00.31 php-fpm: pool trial_3
18293 www-data 20 0 243M 37152 26060 S 4.0 1.8 0:00.29 php-fpm: pool trial_3
18294 www-data 20 0 243M 37148 26056 S 4.0 1.8 0:00.30 php-fpm: pool trial_3
18322 www-data 20 0 62220 6808 4776 S 1.3 0.3 0:00.04 nginx: worker process
18349 root 20 0 4912 3236 2684 R 0.0 0.2 0:00.46 httpd
tc/p279 root -fpm.con6238M 11252 6032 S 0.0 0.6 0:00.05 php-fpm: master process (/e
le t455 rootTERM=vt20 0 2456 0 0 0 0.0 0:00.00 /gnss/bin/busybox sh
5186 root 20 0 2456 0 0 0 0.0 0:00.02 /tmp/gnss/bin/udhcp -s /gn
s318279 rootc/default20 0 238M 11652 6032 S 0.0 0.6 0:00.01 php-fpm: master process (/e
tc18281 www-data 20 0 238M 10816 5180 S 0.0 0.5 0:00.00 php-fpm: pool trial_1
18283 www-data 20 0 238M 10420 5180 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
18284 www-data 20 0 238M 10420 5180 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
18285 www-data 20 0 238M 10420 5180 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
18286 www-data 20 0 238M 10420 5180 S 0.0 0.5 0:00.00 php-fpm: pool trial_2

CPU: [|||||100.0%] Tasks: 26, 0 thr; 1 running
Mem: [|||||793M/1.92G] Load average: 2.22 1.21 1.08
Swap: [|||||130M/2.00G] Uptime: 1 day, 01:36:59

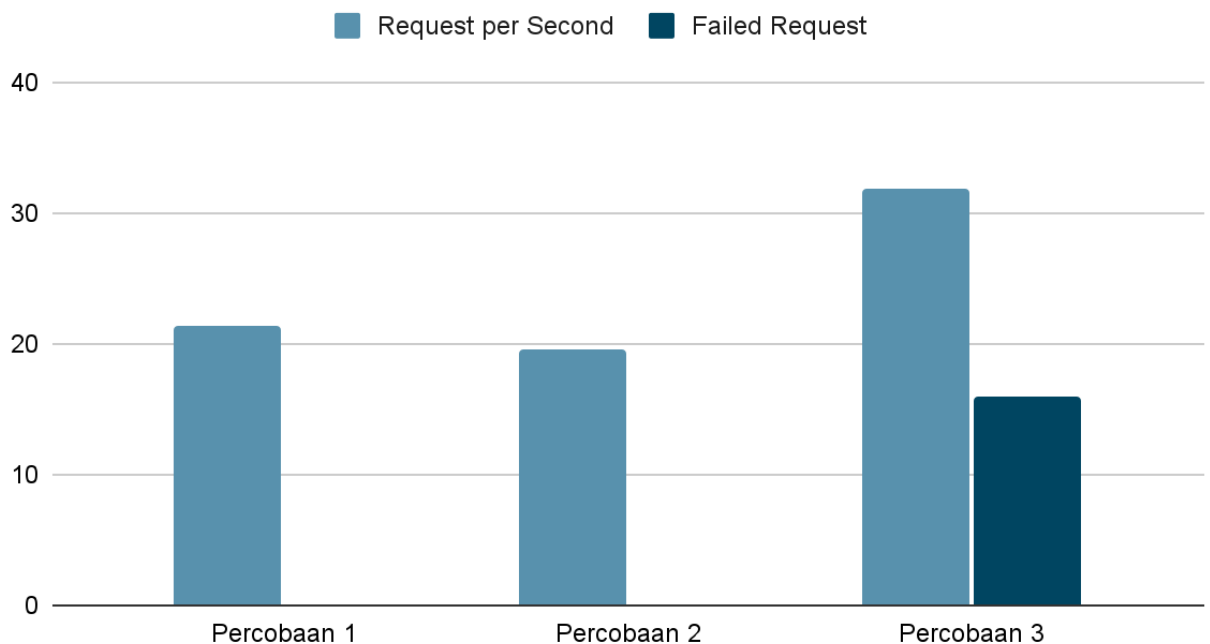
PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
18300 www-data 20 0 243M 38036 26800 R 6.2 1.9 0:00.24 php-fpm: pool trial_3
18298 www-data 20 0 242M 37296 26212 S 6.2 1.9 0:00.23 php-fpm: pool trial_3
tc/p302 www-data -fpm.con 243M 37336 26248 R 4.9 1.9 0:00.22 php-fpm: pool trial_3
tc/p2958.0/fpm/php-fpm.con 243M 38304 26820 S 4.9 1.9 0:00.44 php-fpm: pool trial_3
18356 www-data 20 0 242M 37296 26212 S 4.9 1.9 0:00.20 php-fpm: pool trial_3
293 3M 38308 26772 R 3.7 1.9 46
299 2M 37296 26212 S 3.7 1.9 23
294 3M 38272 26820 S 3.7 1.9 42
18301 www-data 20 0 243M 37412 26252 S 3.7 1.9 0:00.21 php-fpm: pool trial_3
18364 www-data 20 0 240M 31904 23524 R 3.7 1.6 0:00.03 php-fpm: pool trial_3
18338 www-data 20 0 62228 6652 4608 S 0.0 0.3 0:00.02 nginx: worker process
18285 root 20 0 238M 11104 5888 R 0.0 0.6 0:00.04 php-fpm: master process (/e
tc/php/8.0/fpm/php-fpm.con 3996 2948 2672 S 0.0 0.1 0:00.11 bash
643 root 20 0 2456 0 0 0 0.0 0:00.02 /gnss/bin/busybox sh -c whi
le t674 rootTERM=vt20 0 2456 0 0 0 0.0 0:00.00 /gnss/bin/busybox sh
5186 root 20 0 2456 0 0 0 0.0 0:00.01 /tmp/gnss/bin/udhcp -s /gn
tc18287 www-data 20 0 238M 10160 4924 S 0.0 0.5 0:00.00 php-fpm: pool trial_1
18288 www-data 20 0 238M 10160 4924 S 0.0 0.5 0:00.00 php-fpm: pool trial_1
18289 www-data 20 0 238M 10160 4924 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
F118356 www-data 20 0 239M 24196 17684 R 0.0 1.2 0:00.00 php-fpm: pool trial_3

CPU: [|||||92.2%] Tasks: 26, 0 thr; 1 running
Mem: [|||||793M/1.92G] Load average: 2.22 1.21 1.08
Swap: [|||||130M/2.00G] Uptime: 1 day, 01:37:00

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
18452 www-data 20 0 243M 38316 27028 S 7.8 1.9 0:00.27 php-fpm: pool trial_3
18451 www-data 20 0 243M 38352 26920 S 6.2 1.9 0:00.42 php-fpm: pool trial_3
18451 www-data 20 0 242M 37208 26108 S 5.2 1.9 0:00.24 php-fpm: pool trial_3
18517 www-data 20 0 243M 36016 26560 S 5.2 1.8 0:00.11 php-fpm: pool trial_3
18516 www-data 20 0 243M 37264 26160 S 3.9 1.9 0:00.14 php-fpm: pool trial_3
18450 www-data 20 0 243M 37212 26100 S 3.9 1.9 0:00.22 php-fpm: pool trial_3
48 3M 38212 26716 S 2.6 1.9 40
18449 www-data 20 0 243M 38204 26732 S 2.6 1.9 0:00.36 php-fpm: pool trial_3
tc/p453 www-data -fpm.con 243M 37296 26160 S 2.6 1.9 0:00.21 php-fpm: pool trial_3
tc/p4918.0/fpm/php-fpm.con 62220 6636 4592 S 2.6 0.3 0:00.04 nginx: worker process
18446 www-data 20 0 243M 38304 26792 S 1.3 1.9 0:00.41 php-fpm: pool trial_3
18508 root 20 0 4912 3336 2784 R 0.0 0.2 0:00.32 httpd
tc18438 rootpm/php-20 0 238M 11072 5840 S 0.0 0.6 0:00.06 php-fpm: master process (/e
339 root 20 0 2456 0 0 0 0.0 0:00.02 /gnss/bin/busybox sh -c whi
tc18439 www-data 20 0 238M 10816 5176 S 0.0 0.5 0:00.00 php-fpm: pool trial_1
18440 www-data 20 0 238M 10816 5176 S 0.0 0.5 0:00.00 php-fpm: pool trial_1
18441 www-data 20 0 238M 10816 5176 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
18442 www-data 20 0 238M 10428 5176 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
18444 www-data 20 0 238M 10428 5176 S 0.0 0.5 0:00.00 php-fpm: pool trial_2
18455 www-data 20 0 238M 10428 5176 S 0.0 0.5 0:00.00 php-fpm: pool www
```

II. Grafik

Perbandingan Batasan PHP-FPM



III. Analisa

Dilihat dari hasil grafik, percobaan paling efisien adalah ketiga menggunakan konfigurasi pertama, yaitu jumlah children dalam setiap worker node dibatasi lebih sedikit. Dengan pembatasan tersebut, maka request akan didistribusikan secara lebih merata pada worker node yang lainnya. Sedangkan dengan menaikkan jumlah children dalam setiap workernya, belum tentu dengan resources yang sama worker node akan mampu untuk menjalankan children dengan jumlah tersebut. Sehingga dapat mengakibatkan banyak request yang gagal.

```
ab -n 100 -c 10 -H "Content-Type: application/json" -H "Authorization: Bearer eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJpc3MiOiJodHRwOi8vd29ya2VyL2FwaS9hdXRoL2xvZ2luIiwiaWF0IjoxNzAwMTM3NTUzLCJleHAiOiJlE3MDAxNDExNTMsIm5iZiI6MTcwMDEzNzU1MywianRpIjoiUUZCVHY0UU1Va1VEEdXR2eSIsInN1YiI6IjQiLCJwcnYiOiIyM2JkNWM4OTQ5ZjYwMGFkYjM5ZTcwMWM0MDA4NzJkYjdhNTk3NmY3In0.rioyGhPAGEPNleeXlIwo14LB9erewybZWb0e20YY-28" http://canyon.a01.com/api/me
```

Server Software: nginx/1.14.2
Server Hostname: canyon.a01.com
Server Port: 80

Document Path: /api/me
Document Length: 115 bytes

Concurrency Level: 10
Time taken for tests: 5.263 seconds
Complete requests: 100
Failed requests: 0
Total transferred: 39798 bytes
HTML transferred: 11500 bytes
Requests per second: 19.00 [#/sec] (mean)
Time per request: 526.307 [ms] (mean)
Time per request: 52.631 [ms] (mean, across all concurrent requests)
Transfer rate: 7.38 [Kbytes/sec] received

Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	1 1.4	0	8
Processing:	125	476 558.6	294	2804
Waiting:	123	476 558.5	293	2804
Total:	125	477 559.1	294	2806

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

50%	294
66%	360
75%	434
80%	486
90%	598
95%	2271
98%	2706
99%	2806
100%	2806 (longest request)

```
Failed requests: 0
Total transferred: 39798 bytes
HTML transferred: 11500 bytes
Requests per second: 19.00 [#/sec] (mean)
Time per request: 526.307 [ms] (mean)
Time per request: 52.631 [ms] (mean, across all concurrent requests)
Transfer rate: 7.38 [Kbytes/sec] received
```

Connection Times (ms)

```
min mean[stdev] median max
Connect: 0 1.14 0 8
Processing: 125 476 558.6 294 2804
Waiting: 123 476 558.5 293 2804
Total: 125 477 559.1 294 2806
```

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

```
50% 294
66% 360
75% 434
80% 486
90% 598
95% 2271
98% 2706
99% 2806
100% 2806 (longest request)
root@stark:~#
```

```
CPU[||||| 73.0%] Tasks: 25, 0 thr; 1 running
Mem[||||| 753M/1.92G] Load average: 3.03 1.59 1.16
Swap[||||| 130M/2.00G] Uptime: 1 day, 01:31:48
```

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
18301	www-data	20	0	240M	35824	26216	S	5.7	1.8	0:00.08	php-fpm: pool trial_3
18302	www-data	20	0	240M	35820	26212	S	5.7	1.8	0:00.08	php-fpm: pool trial_3
356				0M	35820	2621		7	05		
300				0M	3582		S	4.6	8		
18295	www-data	20	0	241M	36832	26820	S	3.4	1.8	0:00.28	php-fpm: pool trial_3
18294	www-data	20	0	241M	36804	26820	R	5.4	1.8	0:00.27	php-fpm: pool trial_3
18293	www-data	20	0	241M	36744	26772	R	5.4	1.8	0:00.25	php-fpm: pool trial_3
18299	www-data	20	0	240M	35820	26212	S	3.4	1.8	0:00.07	php-fpm: pool trial_3
18338	www-data	20	0	62228	6652	4608	S	1.1	0.3	0:00.01	nginx: worker process
18355	root@data	20	0	5196	3696	2812	R	1.1	0.2	0:00.05	htopfm: pool trial_3
1	root	20	0	3996	2952	2672	S	0.0	0.1	0:00.11	bash
643	root	20	0	2456	0	0	S	0.0	0.0	0:00.02	/gn3/bin/busybox sh -c whi
le t674	rootTERM=vt20	20	0	2456	0	0	S	0.0	0.0	0:00.00	/gn3/bin/busybox sh
5186	root	20	0	2456	0	0	S	0.0	0.0	0:00.01	/tmp/gn3/bin/udhcpc -s /gn
s318285	rootc/default20	20	0	238M	11508	5888	S	0.0	0.6	0:00.01	php-fpm: master process (/e
tc18287	root	20	0	238M	10560	4924	S	0.0	0.5	0:00.00	php-fpm: pool trial_1
18288	www-data	20	0	238M	10560	4924	S	0.0	0.5	0:00.00	php-fpm: pool trial_1
18289	www-data	20	0	238M	10560	4924	S	0.0	0.5	0:00.00	php-fpm: pool trial_2
F118356	www-data	20	0	239M	24596	17684	R	0.0	1.2	0:00.00	php-fpm: pool trial_3

```
CPU[||||| 73.0%] Tasks: 25, 0 thr; 1 running
Mem[||||| 753M/1.92G] Load average: 3.03 1.59 1.16
Swap[||||| 130M/2.00G] Uptime: 1 day, 01:31:48
```

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
18292	www-data	20	0	242M	37264	27068	S	4.5	2.0	0:00.60	php-fpm: pool trial_3
18287	www-data	20	0	242M	37264	27068	S	4.5	2.0	0:00.60	php-fpm: pool trial_3
18289	www-data	20	0	242M	37536	26052	S	4.5	1.9	0:00.16	php-fpm: pool trial_3
18350	www-data	20	0	240M	35660	26056	S	4.5	1.8	0:00.04	php-fpm: pool trial_3
18290	www-data	20	0	242M	37280	26056	S	3.4	1.9	0:00.15	php-fpm: pool trial_3
18281	www-data	20	0	242M	37276	26052	S	3.4	1.9	0:00.15	php-fpm: pool trial_3
18298	www-data	20	0	242M	37328	26100	S	3.4	1.9	0:00.14	php-fpm: pool trial_3
18284	www-data	20	0	242M	37276	26100	S	2.2	1.9	0:00.14	php-fpm: pool trial_3
18390	www-data	20	0	62228	7276	26056	S	2.2	1.9	0:00.05	nginx: worker process
1	root	20	0	4000	2984	2632	S	0.0	0.1	0:00.09	bash
437	root	20	0	2456	0	0	S	0.0	0.0	0:00.02	/gn3/bin/busybox sh -c whi
le t455	rootTERM=vt20	20	0	2456	0	0	S	0.0	0.0	0:00.00	/gn3/bin/busybox sh
5186	root	20	0	2456	0	0	S	0.0	0.0	0:00.02	/tmp/gn3/bin/udhcpc -s /gn
s318279	rootc/default20	20	0	238M	11652	6832	S	0.0	0.6	0:00.01	php-fpm: master process (/e
tc18281	www-data	20	0	238M	10816	5180	S	0.0	0.5	0:00.00	php-fpm: pool trial_1
18282	www-data	20	0	238M	10816	5180	S	0.0	0.5	0:00.00	php-fpm: pool trial_1
18283	www-data	20	0	238M	10816	5180	S	0.0	0.5	0:00.00	php-fpm: pool trial_2
18284	www-data	20	0	238M	10816	5180	S	0.0	0.5	0:00.00	php-fpm: pool trial_2
18285	www-data	20	0	238M	10816	5180	S	0.0	0.5	0:00.00	php-fpm: pool trial_2
18286	www-data	20	0	238M	10816	5180	S	0.0	0.5	0:00.00	php-fpm: pool trial_2

```
CPU[||||| 73.3%] Tasks: 24, 0 thr; 1 running
Mem[||||| 753M/1.92G] Load average: 2.79 1.56 1.15
Swap[||||| 130M/2.00G] Uptime: 1 day, 01:31:48
```

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
18452	www-data	20	0	240M	35724	26112	S	6.7	1.8	0:00.09	php-fpm: pool trial_3
18445	www-data	20	0	241M	36800	26792	S	4.4	1.8	0:00.25	php-fpm: pool trial_3
18448	www-data	20	0	241M	36732	26716	S	4.4	1.8	0:00.25	php-fpm: pool trial_3
18447	www-data	20	0	241M	36860	26920	S	4.4	1.8	0:00.24	php-fpm: pool trial_3
18450	www-data	20	0	240M	35720	26108	S	4.4	1.8	0:00.08	php-fpm: pool trial_3
18451	www-data	20	0	240M	35720	26108	S	4.4	1.8	0:00.07	php-fpm: pool trial_3
18449	www-data	20	0	241M	36708	26732	S	3.3	1.8	0:00.20	php-fpm: pool trial_3
18453	www-data	20	0	240M	35720	26108	S	3.3	1.8	0:00.05	php-fpm: pool trial_3
18508	root	20	0	4912	3336	2784	R	0.0	0.2	0:00.02	htop
1	root	20	0	3996	2988	2620	S	0.0	0.1	0:00.08	bash
339	root	20	0	2456	0	0	S	0.0	0.0	0:00.02	/gn3/bin/busybox sh -c whi
le t356	rootTERM=vt20	20	0	2456	0	0	S	0.0	0.0	0:00.00	/gn3/bin/busybox sh
5242	root	20	0	2456	1288	1256	S	0.0	0.1	0:00.02	/tmp/gn3/bin/udhcpc -s /gn
s318438	rootc/default20	20	0	238M	11464	5840	S	0.0	0.6	0:00.01	php-fpm: master process (/e
tc18439	www-data	20	0	238M	10816	5176	S	0.0	0.5	0:00.00	php-fpm: pool trial_1
18440	www-data	20	0	238M	10816	5176	S	0.0	0.5	0:00.00	php-fpm: pool trial_1
18441	www-data	20	0	238M	10816	5176	S	0.0	0.5	0:00.00	php-fpm: pool trial_2
18442	www-data	20	0	238M	10816	5176	S	0.0	0.5	0:00.00	php-fpm: pool trial_2
18444	www-data	20	0	238M	10816	5176	S	0.0	0.5	0:00.00	php-fpm: pool trial_2
18455	www-data	20	0	238M	10816	5176	S	0.0	0.5	0:00.00	php-fpm: pool ww