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## Grimoire D15

granz.channel.d15.com

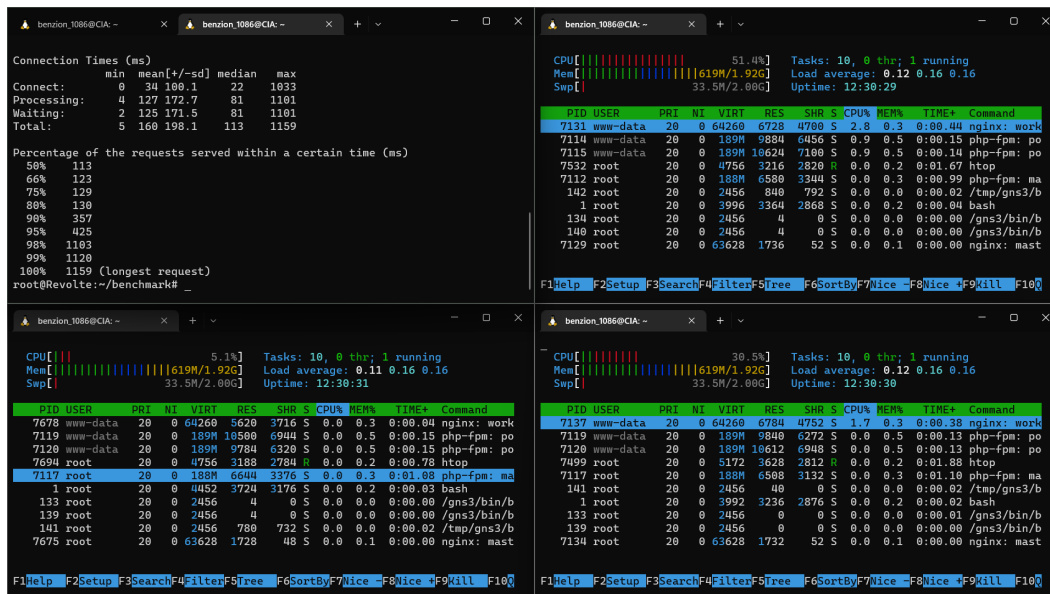
1. Aturlah agar Eisen dapat bekerja dengan maksimal, lalu lakukan testing dengan 1000 request dan 100 request/second.

Command testing:

\$ ab -n 1000 -c 100 -g granz.channel.d15.com1.out <http://granz.channel.d15.com/>

Hasil output terletak pada /root/benchmark/granz.channel.d15.com1.out di client Revolte

[https://docs.google.com/document/d/1rOdP4x\\_y7I18I9AHJ4Tbqs7zMjq2aagFiLhy7H53Wxw/edit?usp=sharing](https://docs.google.com/document/d/1rOdP4x_y7I18I9AHJ4Tbqs7zMjq2aagFiLhy7H53Wxw/edit?usp=sharing)



2. Karena diminta untuk menuliskan grimoire, buatlah analisis hasil testing dengan 200 request dan 10 request/second masing-masing algoritma Load Balancer dengan ketentuan sebagai berikut:
  - a. Nama Algoritma Load Balancer
  - b. Report hasil testing pada Apache Benchmark
  - c. Grafik request per second untuk masing masing algoritma.
  - d. Analisis (8)

## 2.1. Round robin

Report hasil testing pada apache benchmark

[https://docs.google.com/document/d/1sq-zEhml\\_AdjxkpvQOb05m93IGkJsQqhDI8oA9vYvE/edit?usp=sharing](https://docs.google.com/document/d/1sq-zEhml_AdjxkpvQOb05m93IGkJsQqhDI8oA9vYvE/edit?usp=sharing)

The four terminal screenshots show the output of the Apache Benchmark (ab) tool. Each screenshot includes a header with CPU usage, memory usage, and a table of process statistics. The processes listed include www-data, root, and various system processes like htop, bash, and nginx.

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
7557	www-data	20	0	64360	6560	4476	S	1.5	0.3	0:00.16	nginx: work
7575	root	20	0	4756	3228	2828	R	0.0	0.2	0:00.03	htop
1	root	20	0	3992	3220	2696	S	0.0	0.2	0:00.09	bash
57	root	20	0	2456	0	0	S	0.0	0.0	0:00.00	/gnss3/bin/b
63	root	20	0	2456	0	0	S	0.0	0.0	0:00.00	/gnss3/bin/b
65	root	20	0	2456	4	0	S	0.0	0.0	0:00.00	/tmp/gnss3/b
7015	root	20	0	1888	6672	3296	S	0.0	0.3	0:00.74	php-fpm: ma
7016	www-data	20	0	189M	6552	3156	S	0.0	0.3	0:00.00	php-fpm: po
7017	www-data	20	0	189M	6552	3156	S	0.0	0.3	0:00.00	php-fpm: po
7555	root	20	0	63628	1716	56	S	0.0	0.1	0:00.00	nginx: mast

Requests per second: 625 requests / s

## 2.2. Least connection

Report hasil testing pada apache benchmark

[https://docs.google.com/document/d/16Yuplxd7jYXr\\_5hZG16Gqa-QPrdMUKewmdxSHJ-wEyg/edit?usp=sharing](https://docs.google.com/document/d/16Yuplxd7jYXr_5hZG16Gqa-QPrdMUKewmdxSHJ-wEyg/edit?usp=sharing)

The four terminal screenshots show the output of the Apache Benchmark (ab) tool. Each screenshot includes a header with CPU usage, memory usage, and a table of process statistics. The processes listed include www-data, root, and various system processes like htop, bash, and nginx.

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
7596	www-data	20	0	64348	6652	4576	S	1.6	0.3	0:00.06	nginx: work
7613	root	20	0	4756	3124	2724	R	0.0	0.2	0:00.01	htop
1	root	20	0	3992	3220	2696	S	0.0	0.2	0:00.09	bash
57	root	20	0	2456	0	0	S	0.0	0.0	0:00.00	/gnss3/bin/b
63	root	20	0	2456	0	0	S	0.0	0.0	0:00.00	/gnss3/bin/b
65	root	20	0	2456	4	0	S	0.0	0.0	0:00.00	/tmp/gnss3/b
7015	root	20	0	1888	6672	3296	S	0.0	0.3	0:00.75	php-fpm: ma
7016	www-data	20	0	189M	6552	3156	S	0.0	0.3	0:00.00	php-fpm: po
7017	www-data	20	0	189M	6552	3156	S	0.0	0.3	0:00.00	php-fpm: po
7594	root	20	0	63628	1704	52	S	0.0	0.1	0:00.00	nginx: mast

Requests per second: 630.91 requests / s

## 2.3. IP Hash

Report hasil testing pada apache benchmark

<https://docs.google.com/document/d/1qNAssoHuOvJVWet6EhPV-oimW1FEnv7kQvtChWmVCwE4/edit?usp=sharing>

CPU	Mem	Swap	Tasks	thr	running	Load average	Uptime
16.7%	622M/1.92G	33.5M/2.00G	10	0	1	0.51 0.34 0.28	11:44:21
16.4%	622M/1.92G	33.5M/2.00G	10	0	1	0.51 0.34 0.28	11:44:21
17.7%	622M/1.92G	33.5M/2.00G	10	0	1	0.51 0.34 0.28	11:44:21
17.9%	622M/1.92G	33.5M/2.00G	10	0	1	0.51 0.34 0.28	11:44:21

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
7596	www-data	20	0	64348	6652	4576	S	1.6	0.3	0:00.11	nginx: work
1	root	20	0	3992	3220	2696	S	0.0	0.2	0:00.09	bash
57	root	20	0	2456	0	0	S	0.0	0.0	0:00.00	/gnss3/bin/b
63	root	20	0	2456	0	0	S	0.0	0.0	0:00.00	/gnss3/bin/b
65	root	20	0	2456	4	0	S	0.0	0.0	0:00.00	/tmp/gnss3/b
7015	root	20	0	189M	6072	3296	S	0.0	0.3	0:00.77	php-fpm: ma
7016	www-data	20	0	189M	6552	3156	S	0.0	0.3	0:00.00	php-fpm: po
7017	www-data	20	0	189M	6552	3156	S	0.0	0.3	0:00.00	php-fpm: po
7594	root	20	0	63628	1704	52	S	0.0	0.1	0:00.00	nginx: mast
7615	root	20	0	4756	3220	2820	R	0.0	0.2	0:00.00	htop

Requests per second: 662.25 requests / s

## 2.4. Generic Hash

Report hasil testing pada apache benchmark

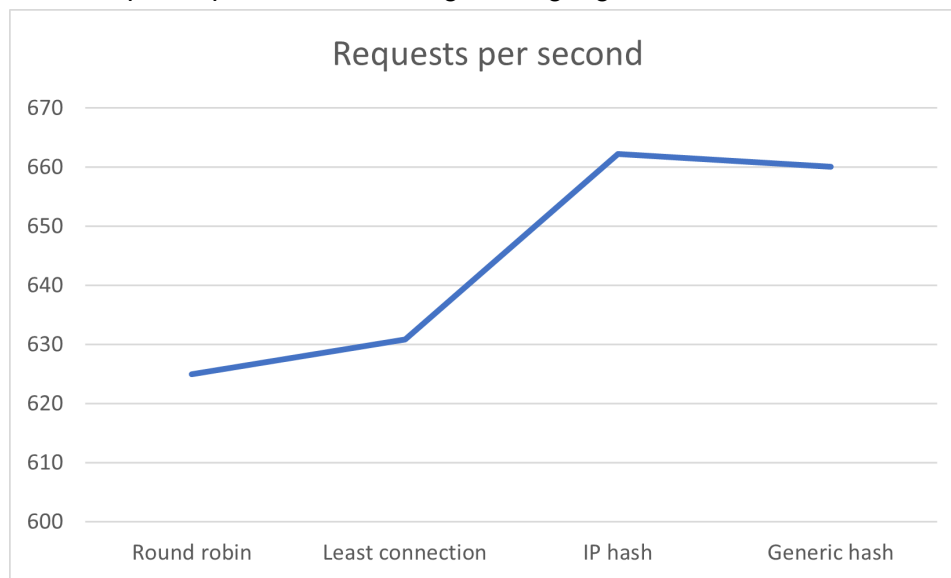
<https://docs.google.com/document/d/18GXZZCYih4sUXSaZWfPaCoWlfl337t3-6QriV9Yitp8/edit?usp=sharing>

CPU	Mem	Swap	Tasks	thr	running	Load average	Uptime
18.0%	622M/1.92G	33.5M/2.00G	10	0	1	0.62 0.30 0.27	11:37:08
18.0%	622M/1.92G	33.5M/2.00G	10	0	1	0.62 0.30 0.27	11:37:08
18.8%	622M/1.92G	33.5M/2.00G	10	0	1	0.62 0.30 0.27	11:37:08
18.8%	622M/1.92G	33.5M/2.00G	10	0	1	0.62 0.30 0.27	11:37:09

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
7519	www-data	20	0	64356	6748	4656	S	1.6	0.3	0:00.04	nginx: work
1	root	20	0	3992	3220	2696	S	0.0	0.2	0:00.08	bash
57	root	20	0	2456	0	0	S	0.0	0.0	0:00.00	/gnss3/bin/b
63	root	20	0	2456	0	0	S	0.0	0.0	0:00.00	/gnss3/bin/b
65	root	20	0	2456	4	0	S	0.0	0.0	0:00.00	/tmp/gnss3/b
7015	root	20	0	189M	6072	3296	S	0.0	0.3	0:00.72	php-fpm: ma
7016	www-data	20	0	189M	6552	3156	S	0.0	0.3	0:00.00	php-fpm: po
7017	www-data	20	0	189M	6552	3156	S	0.0	0.3	0:00.00	php-fpm: po
7517	root	20	0	63628	1724	52	S	0.0	0.1	0:00.00	nginx: mast
7536	root	20	0	4756	3156	2756	R	0.0	0.2	0:00.00	htop

Requests per second: 660.07 requests / s

Grafik requests per second masing-masing algoritma:



Hasil analisis:

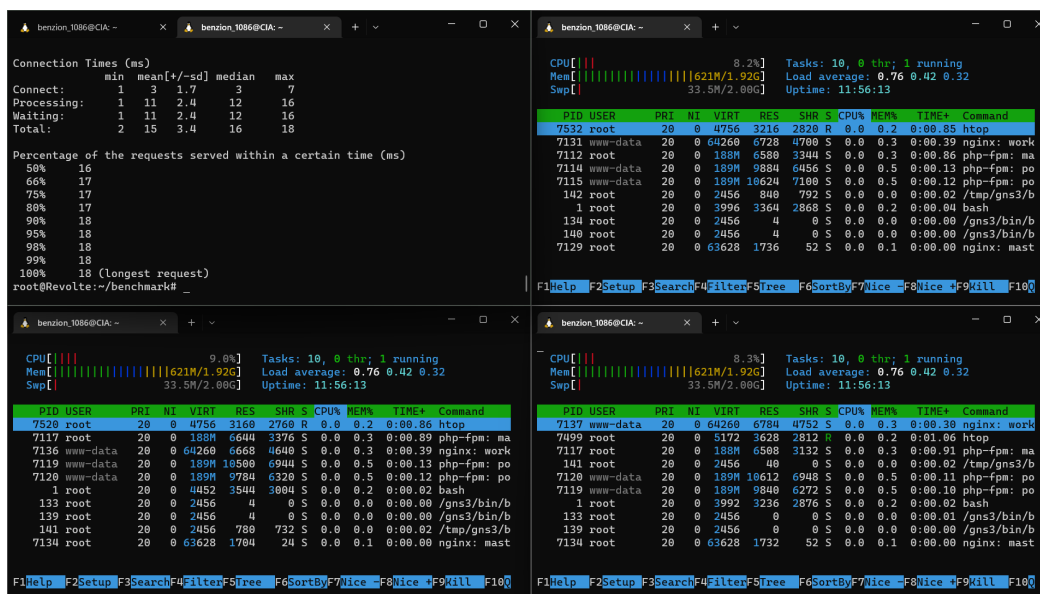
IP hash merupakan algoritma yang paling efisien dalam melakukan load balancing pada kali ini dengan 662.25 requests / s dan yang paling tidak efisien adalah round robin dengan 625 requests / s

3. Dengan menggunakan algoritma Round Robin, lakukan testing dengan menggunakan 3 worker, 2 worker, dan 1 worker sebanyak 100 request dengan 10 request/second, kemudian tambahkan grafiknya pada grimoire. (9)

Command terminal:

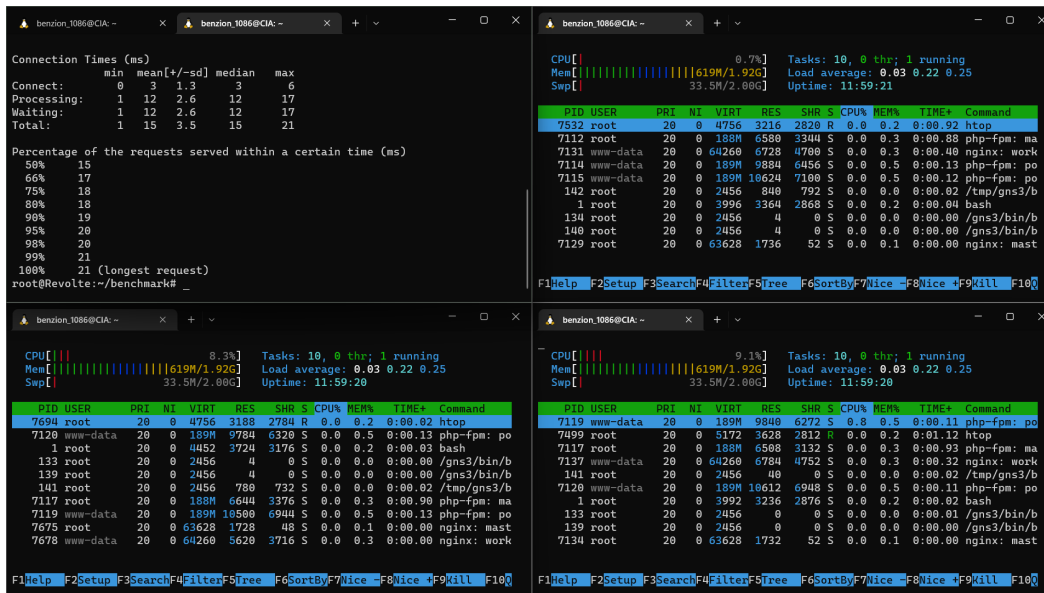
```
$ ab -n 100 -c 10 http://granz.channel.d15.com/
```

3 worker



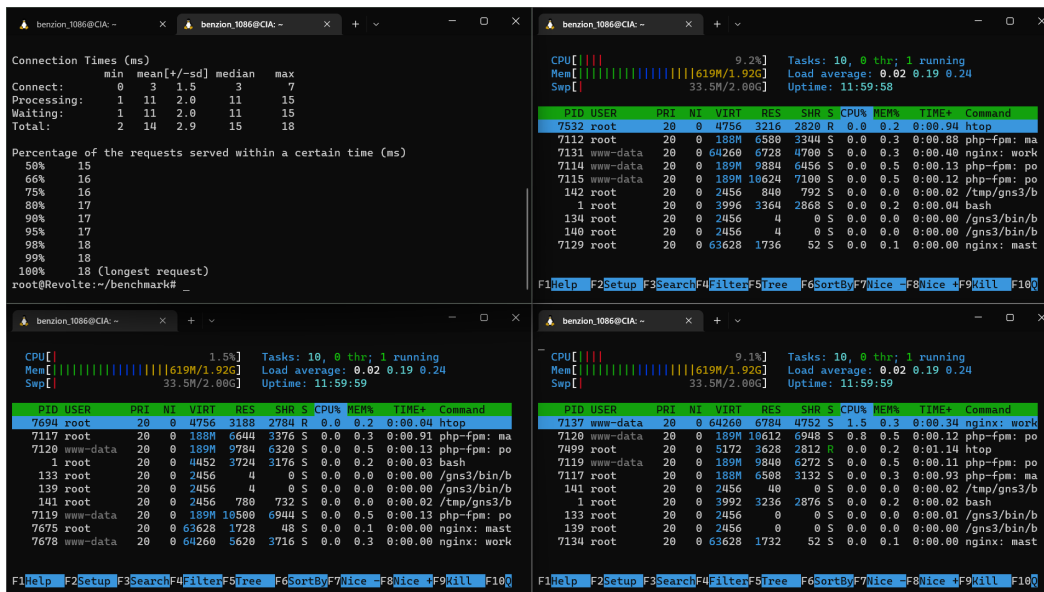
Requests per second: 589.57 [#/sec] (mean)

2 worker



Requests per second: 606.29 [#/sec] (mean)

1 worker



Requests per second: 655.86 [#/sec] (mean)

Grafik requests per second untuk 3, 2, dan 1 workers:

