

GCI Impact

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Runtime experiments: GCI vs NOGCI

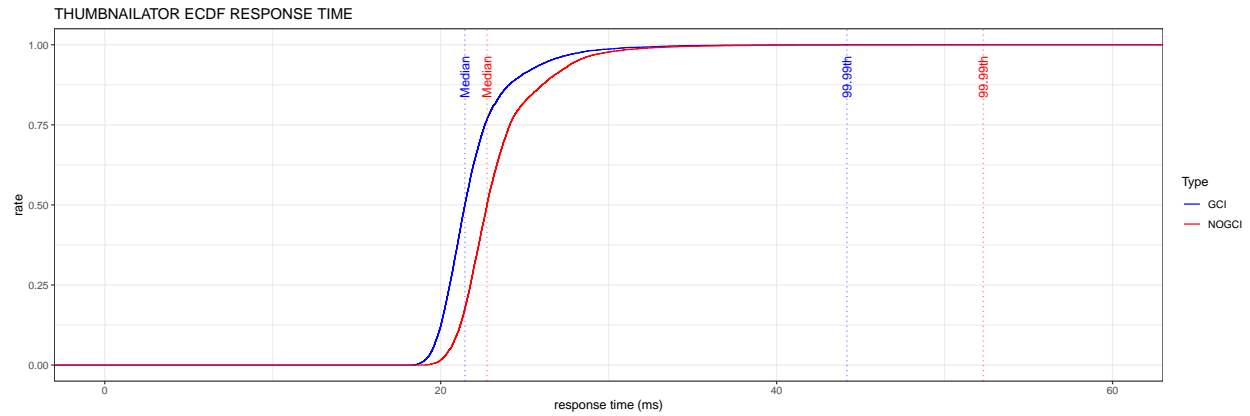
```
## Warning: package 'dplyr' was built under R version 3.6.1
```

```
## Warning: package 'ggplot2' was built under R version 3.6.1
```

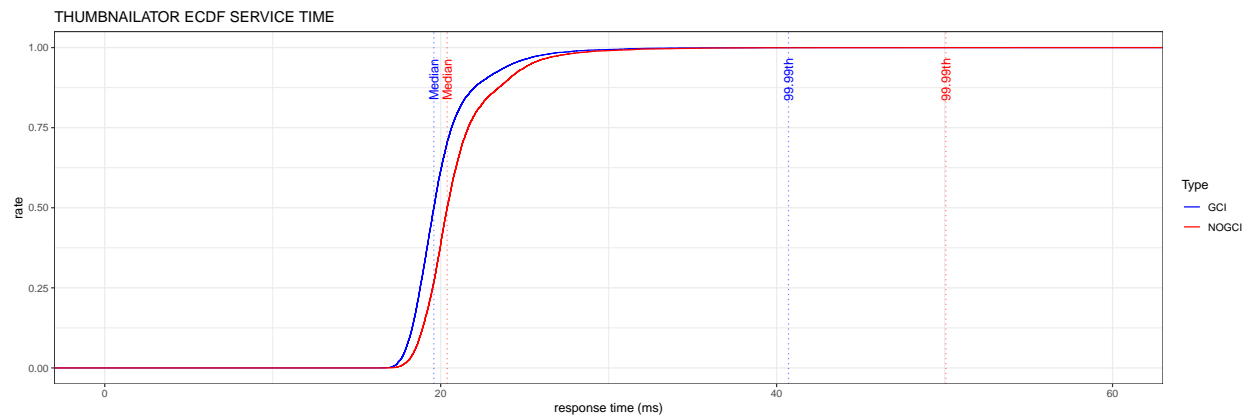
Descrição

- **script de execução dos experimentos.**
- Número de requisições: 5 mil, **código.**
- Lógica de negócio da função: **Redimensionamento de uma imagem.**
- Escala de redimensionamento: 0.1.
- Tamanho da imagem: 131kb.
- comando para levantar a JVM:
 - GCI: `entrypoint_port=8082 scale=0.1 image_url=http://s3.amazonaws.com/wallpapers2/wallpapers/images/000/000/408/thumb/375.jpg taskset 0x1 nice -20 nohup java -server -Xms512m -Xmx512m -XX:MaxMetaspaceSize=52429k -XX:ReservedCodeCacheSize=26214k -Xshare:on -XX:-TieredCompilation -XX:+UseSerialGC -Djava.net.preferIPv4Stack=true -XX:NewRatio=1 -Xloggc:/home/ubuntu/gci-faas-sim/experiment/results/gci1-thumb-gc.log -Djvmtilib=/home/ubuntu/gci-faas-sim/gci-files/libgc.so -javaagent:/home/ubuntu/gci-faas-sim/gci-files/gciagent-0.1-jar-with-dependencies.jar=8500 -jar /home/ubuntu/gci-faas-sim/runtime/thumb-func/target/thumbnailator-server-maven-0.0.1-SNAPSHOT.jar >/home/ubuntu/gci-faas-sim/experiment/results/gci1-thumb-stdout.log 2>/home/ubuntu/gci-faas-sim/experiment/results/gci1-thumb-stderr.log & taskset 0x2 nice -20 /home/ubuntu/gci-faas-sim/gci-files/gci-proxy -port=8080 -target=127.0.0.1:8082 -gci_target=127.0.0.1:8500 -ygen=52428800 >/home/ubuntu/gci-faas-sim/experiment/results/gci1-proxy-stdout.log 2>/home/ubuntu/gci-faas-sim/experiment/results/gci1-proxy-stderr.log &`
 - NOGCI: `entrypoint_port=8080 scale=0.1 image_url=http://s3.amazonaws.com/wallpapers2/wallpapers/images/000/000/408/thumb/375.jpg taskset 0x1 nice -20 java -server -Xms512m -Xmx512m -XX:MaxMetaspaceSize=52429k -XX:ReservedCodeCacheSize=26214k -Xshare:on -XX:-TieredCompilation -XX:+UseSerialGC -Djava.net.preferIPv4Stack=true -Xloggc:/home/ubuntu/gci-faas-sim/experiment/results/nogci1-thumb-gc.log -jar /home/ubuntu/gci-faas-sim/runtime/thumb-func/target/thumbnailator-server-maven-0.0.1-SNAPSHOT.jar >/home/ubuntu/gci-faas-sim/experiment/results/nogci1-thumb-stdout.log 2>/home/ubuntu/gci-faas-sim/experiment/results/nogci1-thumb-stderr.log &`

ECDF for response time



ECDF for service time



summary table of confidence interval for response time

##	stats	gci.cii	gci.cis	nogci.cii	nogci.cis
## 1	avg	22.00	22.00	23.00	23.00
## 2	p50	21.40	21.48	22.72	22.80
## 3	p95	26.28	26.71	27.96	28.31
## 4	p99	30.35	31.72	31.82	33.20
## 5	p999	36.59	40.80	39.14	43.83
## 6	p9999	41.38	51.70	46.67	59.77
## 7	p99999	47.15	48.44	55.22	56.54
## 8	dist	25.75	26.96	32.50	33.75

Os valores em colunas com .cii são referentes à valores limite inferior do intervalo de confiança. O valores em colunas com .cis são referentes à valores limite superior do intervalo de confiança.

GCI: comparing response time vs service time, both in milliseconds

##	stats	gci.st.cii	gci.st.cis	gci.rs.cii	gci.rs.cis
## 1	avg	20.00	20.00	22.00	22.00
## 2	p50	19.56	19.63	21.40	21.48
## 3	p95	24.12	24.51	26.28	26.71
## 4	p99	27.81	28.86	30.35	31.72

## 5	p999	33.53	38.76	36.59	40.80
## 6	p9999	38.95	41.40	41.38	51.70
## 7	p99999	40.98	41.10	47.15	48.44
## 8	dist	21.42	21.47	25.75	26.96

Os valores em colunas com .st são referentes à valores de tempo de serviço. O valores em colunas com .rt são referentes à valores de tempo de serviço. Como esperado, rt é ou maior que st ou não diferente estatisticamente.

NOGCI: comparing response time vs service time, both in milliseconds

##	stats	nogci.st.cii	nogci.st.cis	nogci.rt.cii	nogci.rt.cis
## 1	avg	21.00	21.00	22.00	22.00
## 2	p50	20.35	20.43	21.40	21.48
## 3	p95	25.26	25.59	26.28	26.71
## 4	p99	29.01	30.50	30.35	31.72
## 5	p999	35.68	40.40	36.59	40.80
## 6	p9999	44.20	57.62	41.38	51.70
## 7	p99999	53.02	54.35	47.15	48.44
## 8	dist	32.67	33.93	25.75	26.96

Os valores em colunas com .st são referentes à valores de tempo de serviço. O valores em colunas com .rt são referentes à valores de tempo de serviço. Como esperado, rt é ou maior que st ou não diferente estatisticamente.

checking errors

GCI - number of response time values greater then its service time values: 0

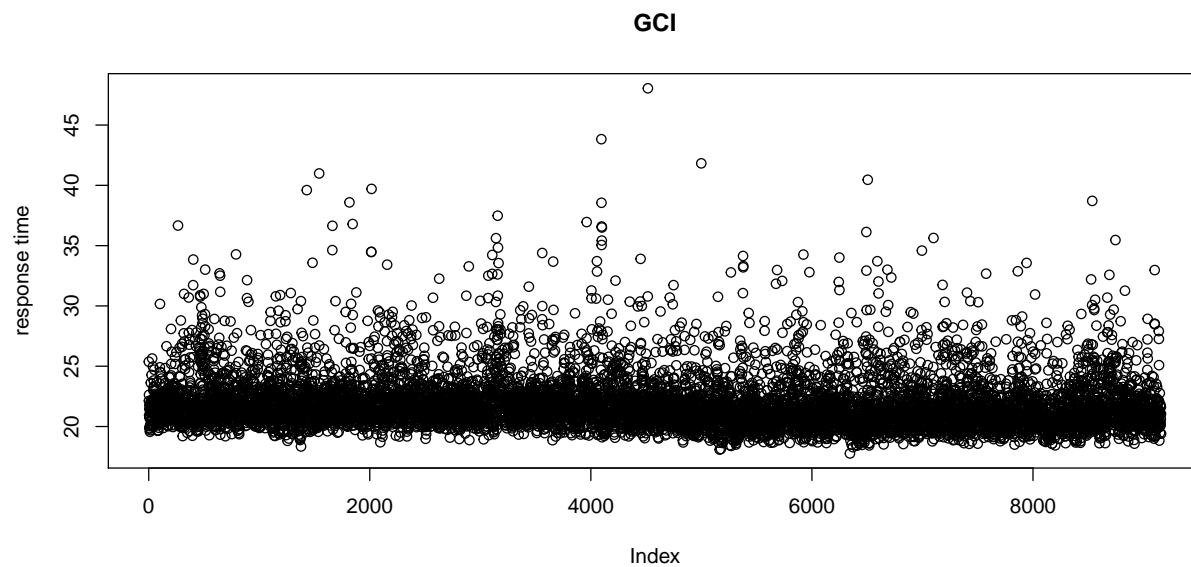
NOGCI - number of response time values greater then its service time values: 0

comparing difference between response time and service time for GCI vs NOGCI

##	stats	gci.st.cii	gci.st.cis	nogci.rt.cii	nogci.rt.cis
## 1	avg	1.900	1.900	2.400	2.400
## 2	p50	1.742	1.757	2.220	2.242
## 3	p95	2.778	2.872	3.470	3.551
## 4	p99	3.703	4.150	4.431	4.881
## 5	p999	6.029	8.002	6.971	8.236
## 6	p9999	8.416	12.370	8.551	12.100
## 7	p99999	10.700	11.170	11.380	11.590
## 8	dist	8.960	9.416	9.156	9.346

Esta tabela está mais para validação do que para uma análise de fato. Esperamos que os valores aqui não sejam grandes/significativos.

GCI: plot response time



NOGCI: plot response time

