

Assignment 3

Step 1. AWS Lambda

32 Threads

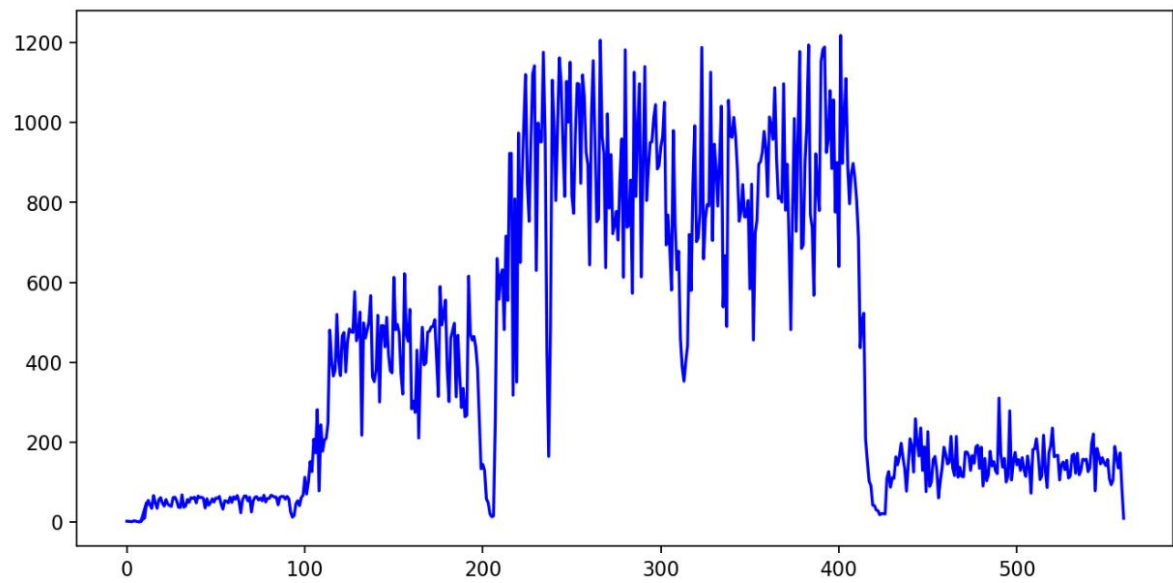
```
"C:\Program Files\Java\jdk1.8.0_161\jre\bin\java.exe" ...
inside : main
log4j:WARN No appenders could be found for logger (com.amazonaws.AmazonWebServiceClient).
log4j:WARN Please initialize the log4j system properly.
log4j:WARN See http://logging.apache.org/log4j/1.2/faq.html#noconfig for more info.
number of warmup threads 3
Running phase Warmup
number of threads submitted3
4500
number of loadingThreads 16
Running phase Loading
number of threads submitted16
44500
number of peak threads 32
Running phase Peak
number of threads submitted32
220500
number of coolDownThreads 8
Running phase Cooldown
number of threads submitted8
=====
Total Requests 240500
Failed Requests 0
Closed File
```

Stats:

```
print("wallTime: ", wallTime, "seconds")
print("throughput: ", throughput)
print("median Latency: ", medianLatency, " milliseconds")
print("95th percentile latency: ", Latency[index95], "milliseconds")
print("99th percentile latency: ", Latency[index99], "milliseconds")
```

```
wallTime: 560.813 seconds
throughput: 428
median Latency: 27 milliseconds
95th percentile latency: 74.0 milliseconds
99th percentile latency: 253.0 milliseconds
```

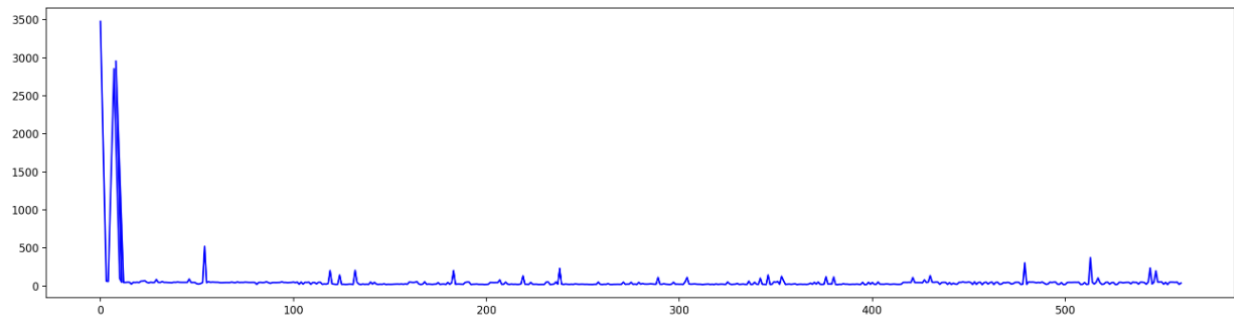
Throughput:



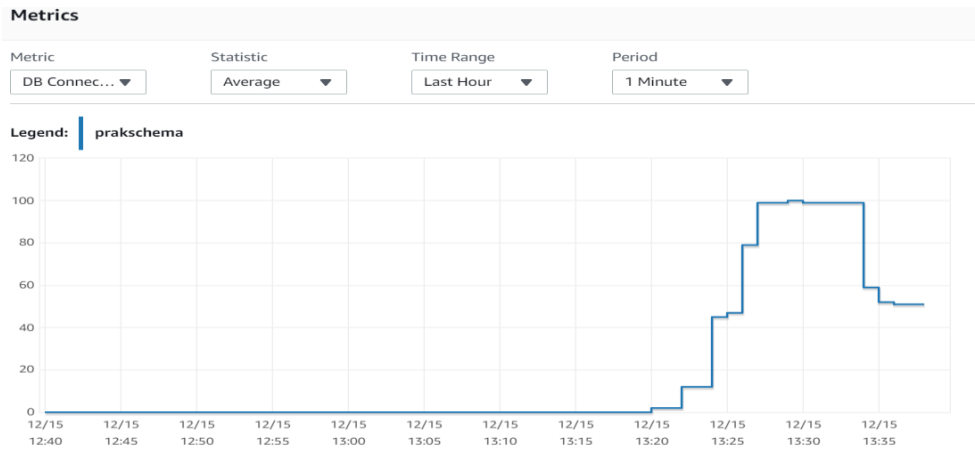
Latency:

max latency: 9756.0
min latency: 16.0

[<matplotlib.lines.Line2D at 0x24f36257dd8>]



DB Connections:



64 Threads:

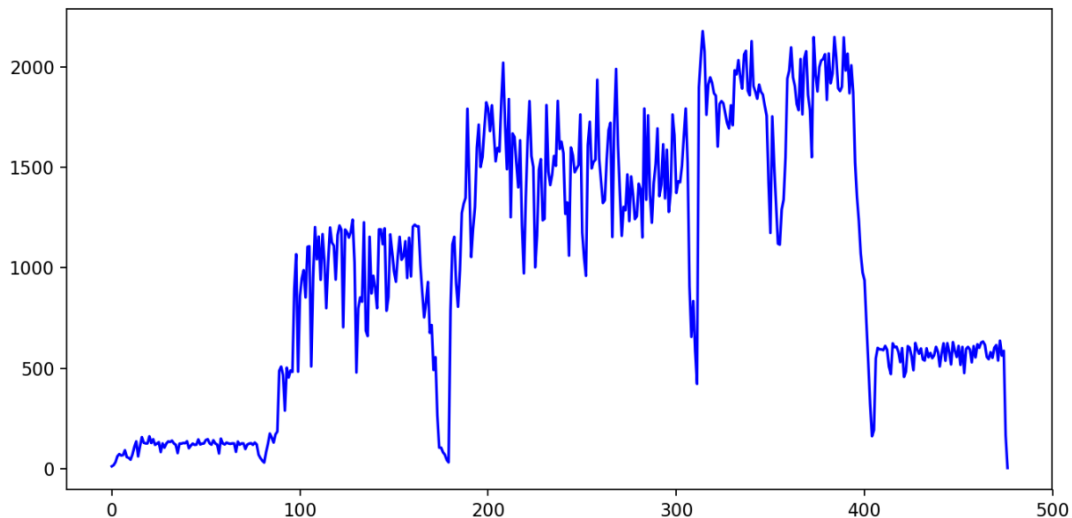
```
"C:\Program Files\Java\jdk1.8.0_161\jre\bin\java.exe" ...
inside : main
log4j:WARN No appenders could be found for logger (com.amazonaws.AmazonWebServiceClient).
log4j:WARN Please initialize the log4j system properly.
log4j:WARN See http://logging.apache.org/log4j/1.2/faq.html#noconfig for more info.
number of warmup threads 6
Running phase Warmup
number of threads submitted6
9000
number of loadingThreads 32
Running phase Loading
number of threads submitted32
89000
number of peak threads 64
Running phase Peak
number of threads submitted64
441000
number of coolDownThreads 16
Running phase Cooldown
number of threads submitted16
=====
Total Requests 481000
Failed Requests 0
Closed File
```

Stats

```
print("wallTime: ", wallTime, "seconds")
print("throughput: ", throughput)
print("median Latency: ", medianLatency, " milliseconds")
print("95th percentile latency: ", Latency[index95], "milliseconds")
print("99th percentile latency: ", Latency[index99], "milliseconds")
```

```
wallTime: 476.133 seconds
throughput: 1010
median Latency: 31 milliseconds
95th percentile latency: 63.0 milliseconds
99th percentile latency: 190.0 milliseconds
```

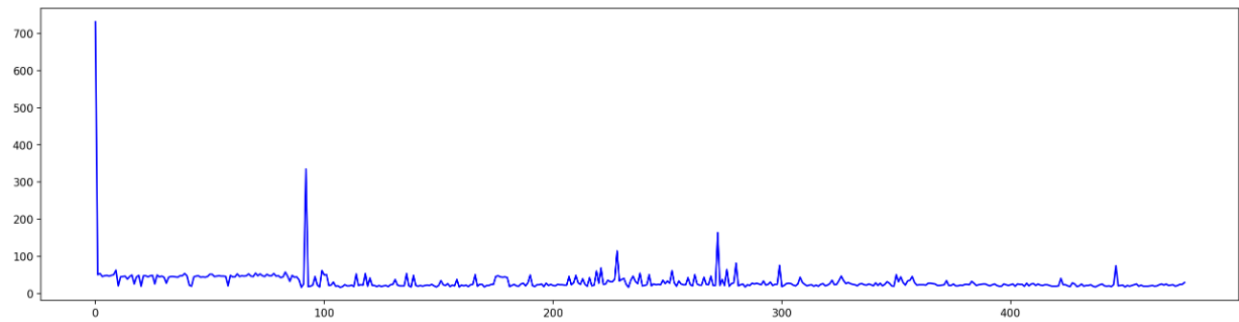
Throughput:



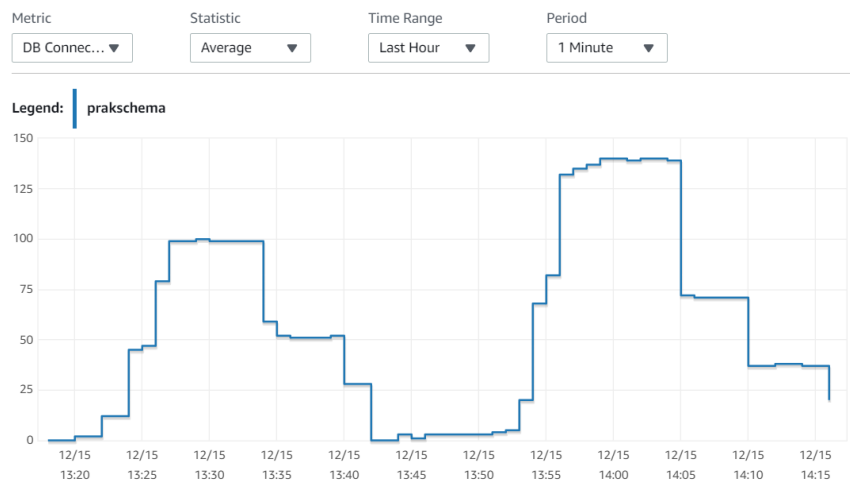
Latency:

max latency: 8115.0
min latency: 16.0

[<matplotlib.lines.Line2D at 0x24f37f93c88>]



RDS connections:



128 Threads

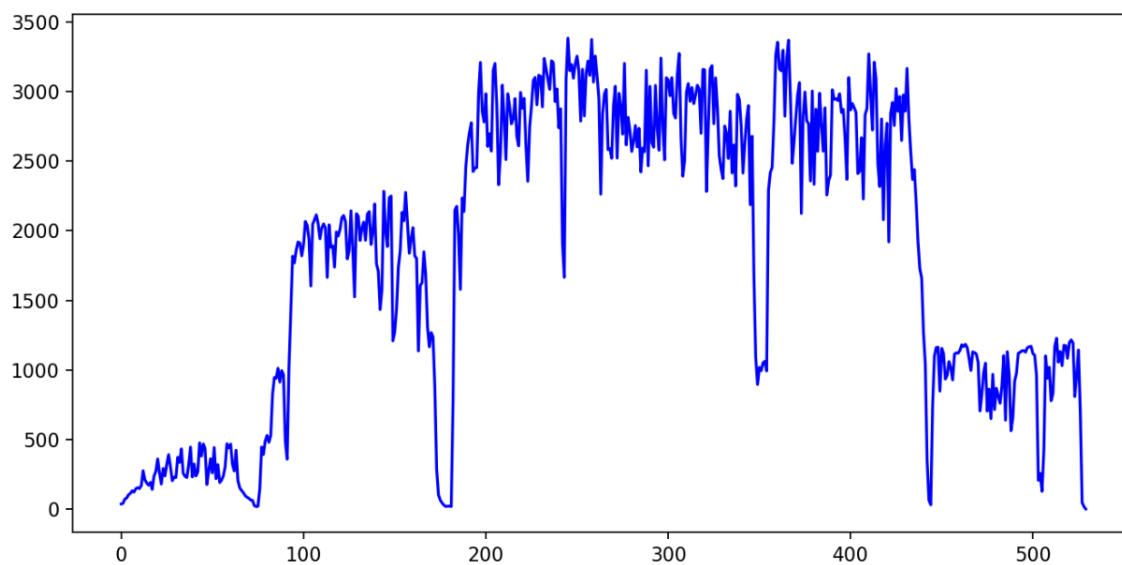
```
inside : main
log4j:WARN No appenders could be found for logger (com.amazonaws.AmazonWebServiceClient).
log4j:WARN Please initialize the log4j system properly.
log4j:WARN See http://logging.apache.org/log4j/1.2/faq.html#noconfig for more info.
number of warmup threads 12
Running phase Warmup
number of threads submitted12
18000
number of loadingThreads 64
Running phase Loading
number of threads submitted64
178000
number of peak threads 128
Running phase Peak
number of threads submitted128
882000
number of coolDownThreads 32
Running phase Cooldown
number of threads submitted32
=====
Total Requests 962000
Failed Requests 0
Closed File
```

Stats:

```
print("wallTime: ", wallTime, "seconds")
print("throughput: ", throughput)
print("median Latency: ", medianLatency, " milliseconds")
print("95th percentile latency: ", Latency[index95], "milliseconds")
print("99th percentile latency: ", Latency[index99], "milliseconds")
```

```
wallTime: 529.546 seconds
throughput: 1816
median Latency: 38 milliseconds
95th percentile latency: 65.0 milliseconds
99th percentile latency: 149.0 milliseconds
```

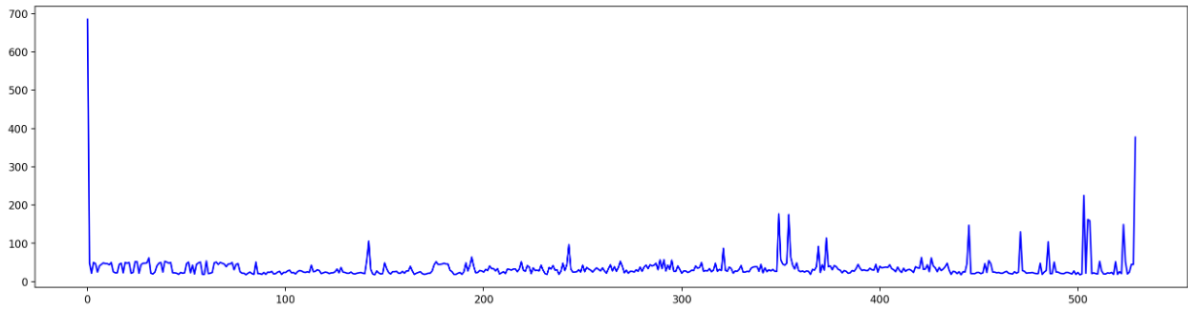
Throughput:



Latency:

max latency: 8232.0
min latency: 16.0

[<matplotlib.lines.Line2D at 0x24f35677a58>]



DB connections:

Metric

DB Connec... ▼

Statistic

Average ▼

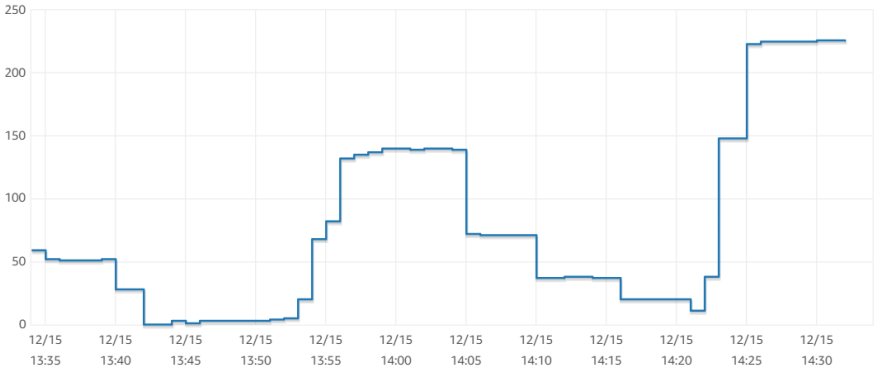
Time Range

Last Hour ▼

Period

1 Minute ▼

Legend: prakschema



256 Threads

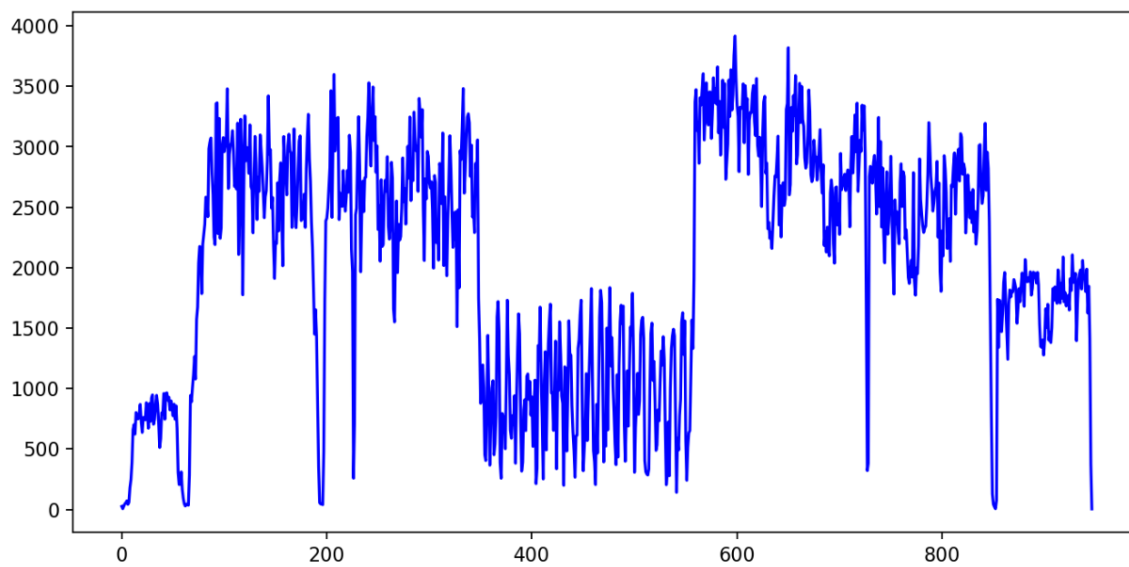
```
"C:\Program Files\Java\jdk1.8.0_161\jre\bin\java.exe" ...
inside : main
log4j:WARN No appenders could be found for logger (com.amazonaws.AmazonWebServiceClient).
log4j:WARN Please initialize the log4j system properly.
log4j:WARN See http://logging.apache.org/log4j/1.2/faq.html#noconfig for more info.
number of warmup threads 25
Running phase Warmup
number of threads submitted25
37500
number of loadingThreads 128
Running phase Loading
number of threads submitted128
357500
number of peak threads 256
Running phase Peak
number of threads submitted256
1765500
number of coolDownThreads 64
Running phase Cooldown
number of threads submitted64
=====
Total Requests 1925500
Failed Requests 0
Closed File
```

Stats:

```
print("wallTime: ", wallTime, "seconds")
print("throughput: ", throughput)
print("median Latency: ", medianLatency, " milliseconds")
print("95th percentile latency: ", Latency[index95], "milliseconds")
print("99th percentile latency: ", Latency[index99], "milliseconds")
```

```
wallTime: 946.22 seconds
throughput: 2034
median Latency: 79 milliseconds
95th percentile latency: 211.0 milliseconds
99th percentile latency: 549.0 milliseconds
```

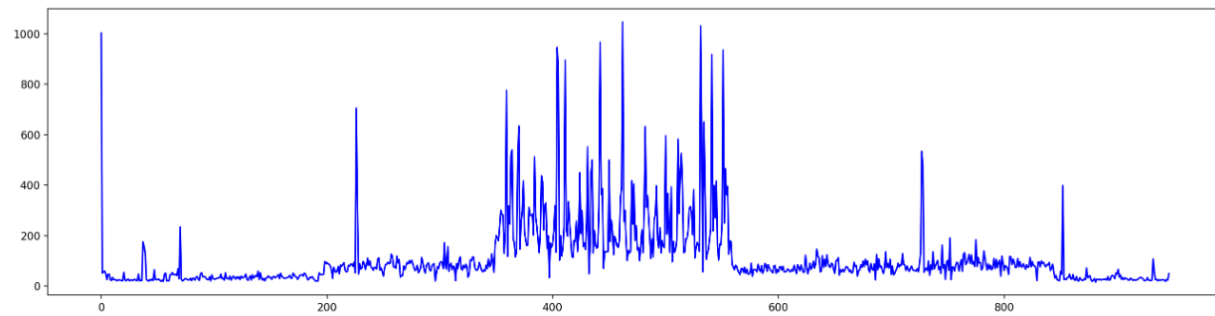
Throughput:



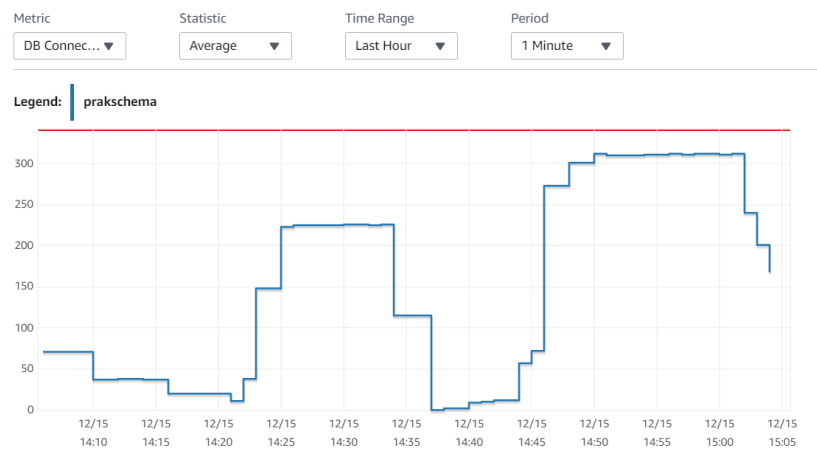
Latency:

max latency: 8346.0
min latency: 15.0

[<matplotlib.lines.Line2D at 0x24f3f18a6d8>]



DB connections:



Wall Time (in seconds) Comparison between EC2 and Lambda:

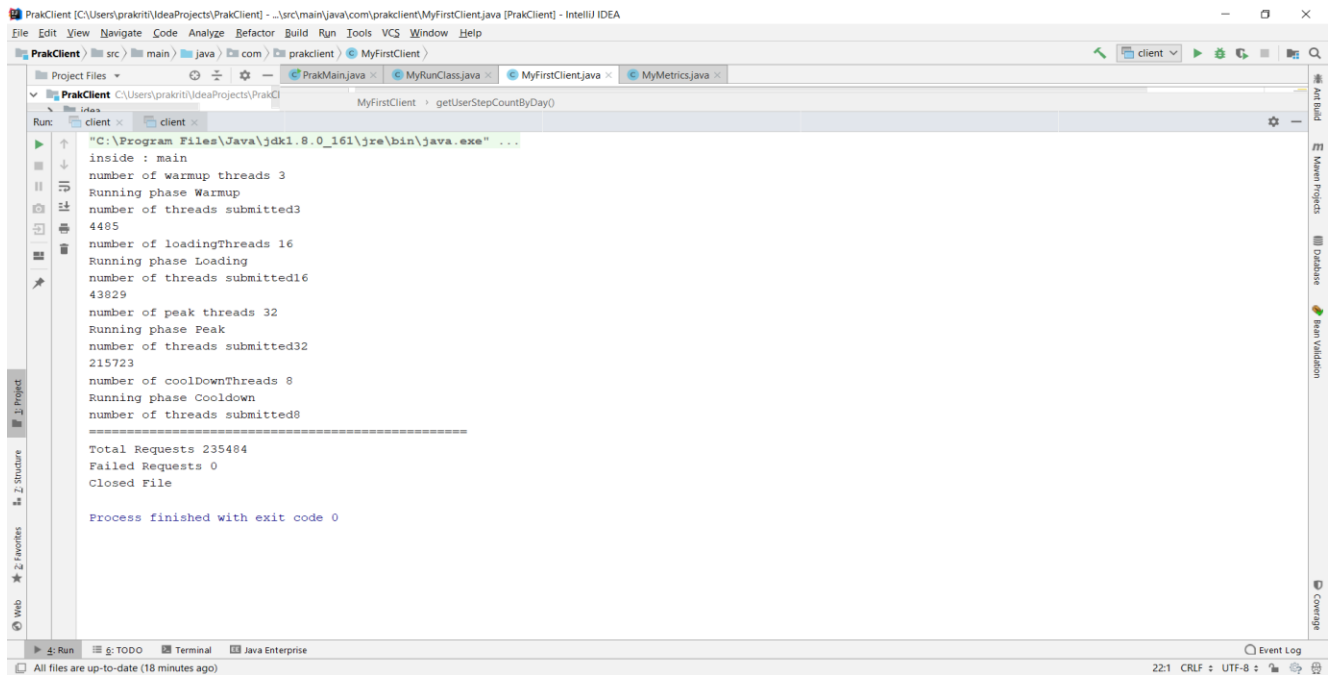
	32 Threads	64 Threads	128 Threads	256 Threads
EC2	133	172	404	728
AWS Lambda	560	476	529	946

As can be observed Lambda is slower than EC2 server. This is probably because, first we don't use DBCP connection pooling with Lambda, secondly Lambda can handle a very limited number of connections at once which cannot be configured by us and depending upon its internal working it balances the load. Also, redirecting requests to different servers and load balancing could add extra seconds to the latency.

Google Cloud Platform:

Steps1: Plot and performance showing results for a test run up to 128 threads

32 Threads:



```
"C:\Program Files\Java\jdk1.8.0_161\jre\bin\java.exe" ...
inside : main
number of warmup threads 3
Running phase Warmup
number of threads submitted3
4485
number of loadingThreads 16
Running phase Loading
number of threads submitted16
43829
number of peak threads 32
Running phase Peak
number of threads submitted32
215723
number of coolDownThreads 8
Running phase Cooldown
number of threads submitted8
=====
Total Requests 235484
Failed Requests 0
Closed File

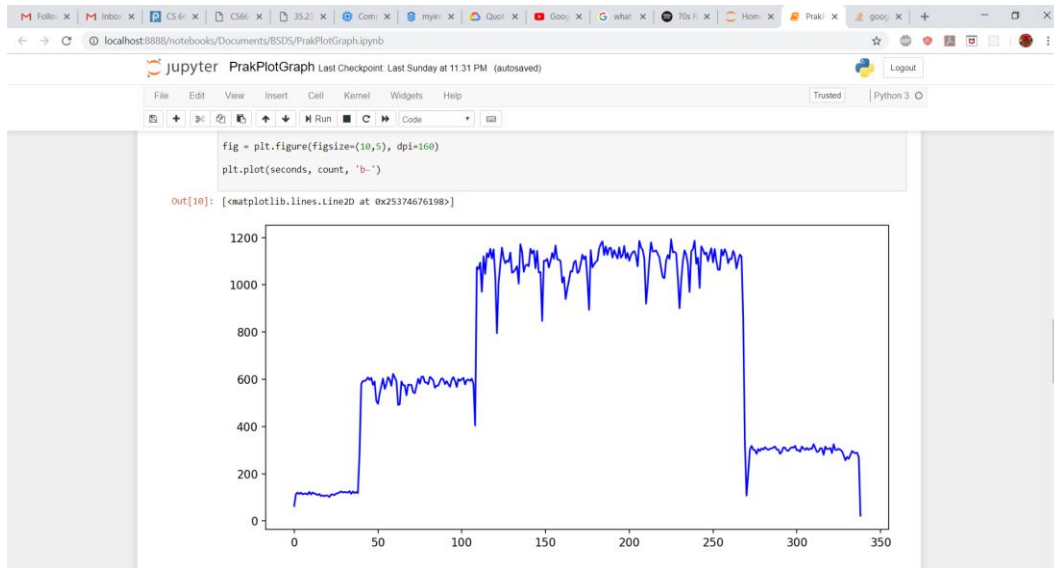
Process finished with exit code 0
```

Stats:

```
print("wallTime: ", wallTime, "seconds")
print("throughput: ", throughput)
print("median Latency: ", medianLatency, " milliseconds")
print("95th percentile latency: ", Latency[index95], "milliseconds")
print("99th percentile latency: ", Latency[index99], "milliseconds")
```

```
wallTime: 338.245 seconds
throughput: 711
median Latency: 28 milliseconds
95th percentile latency: 39.0 milliseconds
99th percentile latency: 63.0 milliseconds
```

Throughput graph:



Latency:

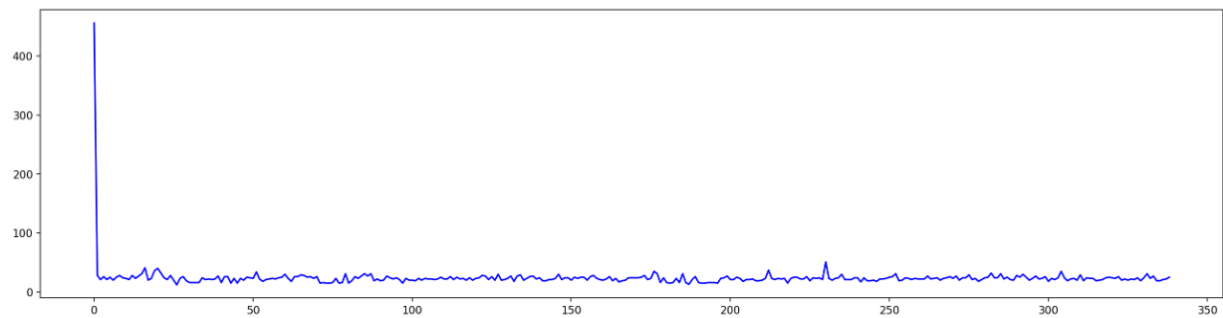
```
fig = plt.figure(figsize=(20,5), dpi=160)
```

```
plt.plot(seconds, avg_lat, 'b-')
```

max latency: 529.0

min latency: 3.0

[<matplotlib.lines.Line2D at 0x25375e72860>]



CloudSQL:

✓ myinstance

MySQL Second Generation master

OVERVIEW

CONNECTIONS

USERS

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OPERATIONS



64 threads

```
PrakClient [C:\Users\prakh\IdeaProjects\PrakClient] - ...main\java\com\prakclient\PrakMain.java [PrakClient] - IntelliJ IDEA
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
PrakClient | src | main | java | com | prakclient | PrakMain
Project Files
PrakClient C:\Users\prakh\IdeaProjects\PrakClient
idea
Run client
"C:\Program Files\Java\jdk1.8.0_161\jre\bin\java.exe" ...
inside : main
number of warmup threads 6
Running phase Warmup
number of threads submitted6
8955
number of loadingThreads 32
Running phase Loading
number of threads submitted32
87818
number of peak threads 64
Running phase Peak
number of threads submitted64
432424
number of coolDownThreads 16
Running phase Cooldown
number of threads submitted16
=====
Total Requests 472273
Failed Requests 0
Closed File
Process finished with exit code 0
```

Stats:

```
wallTime = (endTime-startTime)/1000
throughput = int(length/wallTime)

print("wallTime: ", wallTime, "seconds")
print("throughput: ", throughput)
print("median Latency: ", medianLatency, " milliseconds")
print("95th percentile latency: ", Latency[index95], "milliseconds")
print("99th percentile latency: ", Latency[index99], "milliseconds")

wallTime: 382.051 seconds
throughput: 1258
median Latency: 31 milliseconds
95th percentile latency: 51.0 milliseconds
99th percentile latency: 158.0 milliseconds
```

CloudSQL

✓ myinstance

MySQL Second Generation master

OVERVIEW

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Active connections ▾

1 hour

6 hours

12 hours

1 day

2 days

4 days

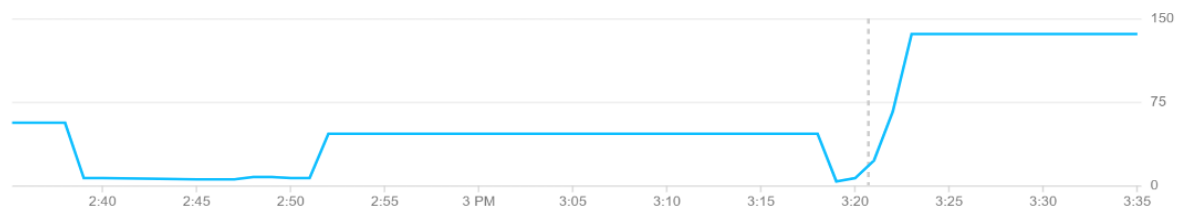
7 days

14 days

30 days

Connections

Dec 6, 2018 3:20 PM

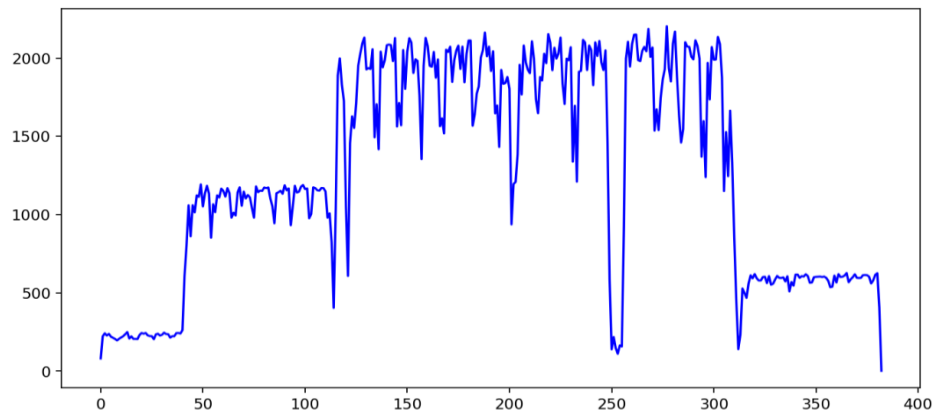


● Active connections (myinstance): 22.00

Throughput Graph:

```
fig = plt.figure(figsize=(10,5), dpi=160)
plt.plot(seconds, count, 'b-')
```

Out[15]: [

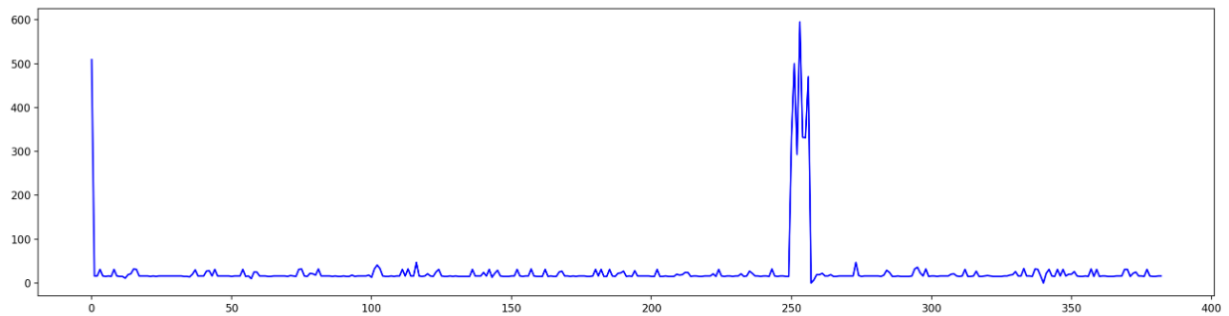


Latency:

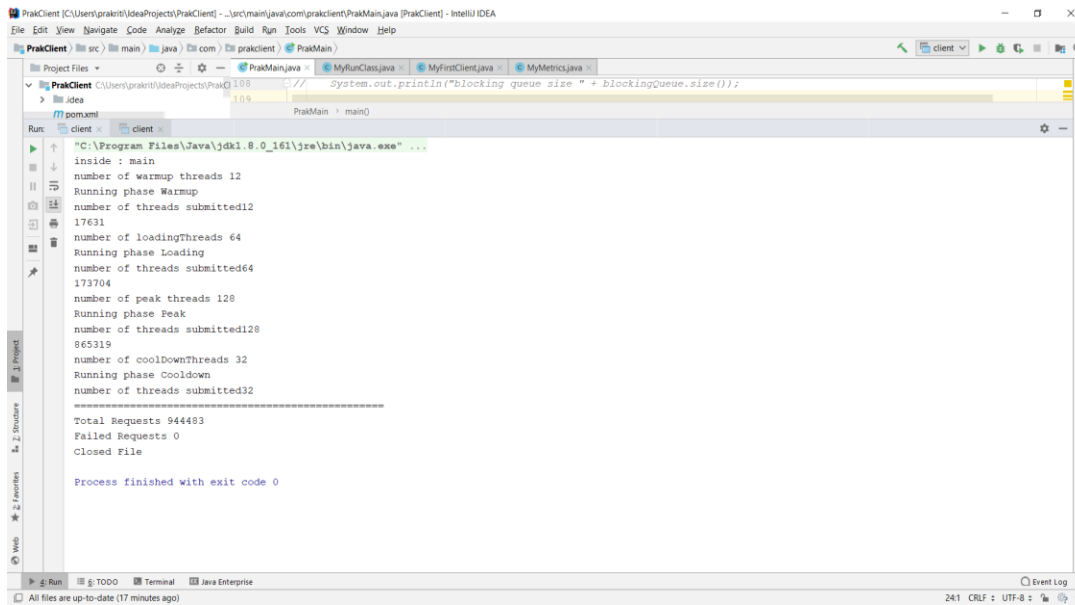
```
fig = plt.figure(figsize=(20,5), dpi=160)
plt.plot(seconds, avg_lat, 'b-')
```

max latency: 1845.0
min latency: 0.0

[<matplotlib.lines.Line2D at 0x25300b19128>]



128 Threads



Stats:

```
wallTime = (endTime-startTime)/1000
throughput = int(length/wallTime)

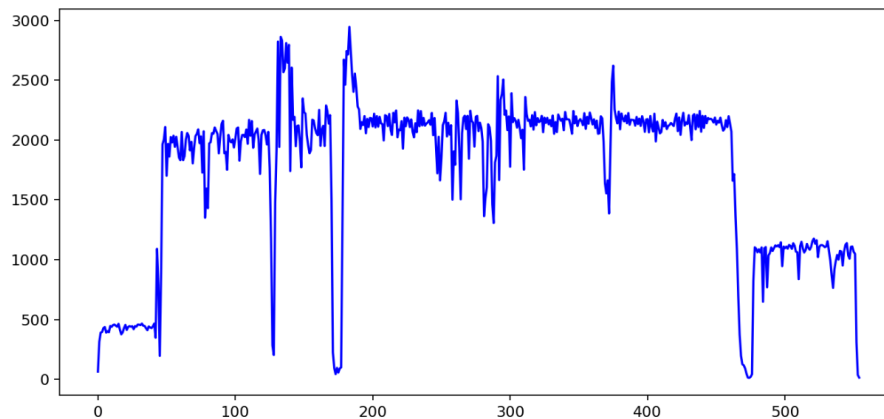
print("wallTime: ", wallTime, "seconds")
print("throughput: ", throughput)
print("median Latency: ", medianLatency, " milliseconds")
print("95th percentile latency: ", Latency[index95], "milliseconds")
print("99th percentile latency: ", Latency[index99], "milliseconds")
```

```
wallTime: 554.312 seconds
throughput: 1735
median Latency: 32 milliseconds
95th percentile latency: 152.0 milliseconds
99th percentile latency: 532.0 milliseconds
```

Throughput:

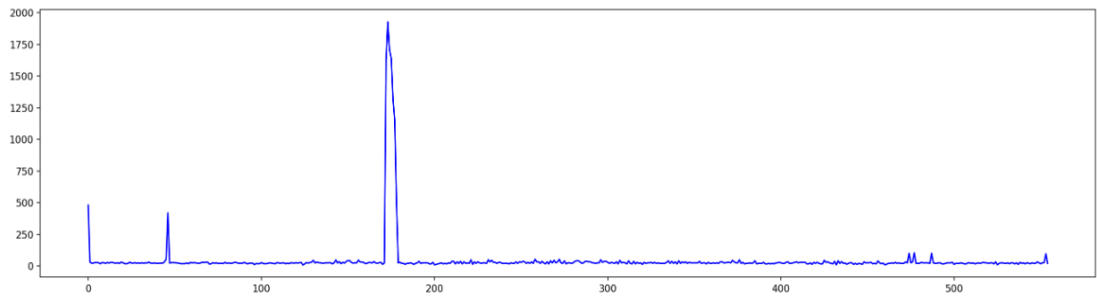
```
plt.plot(seconds, count, 'b-')
```

Out[20]: [<matplotlib.lines.Line2D at 0x2530100b098>]



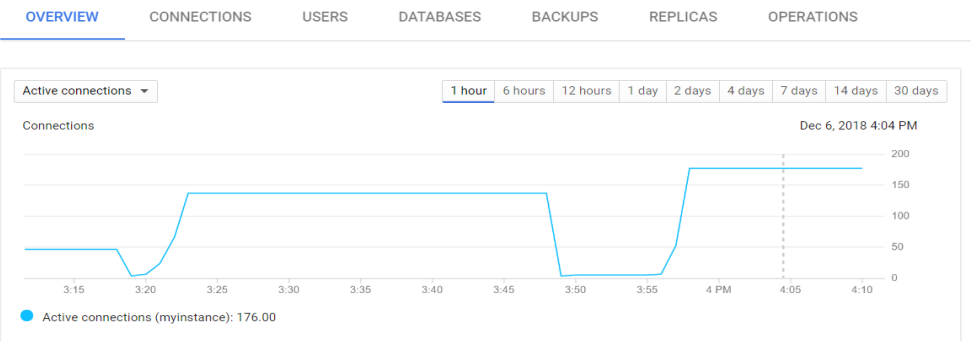
Latency:

max latency: 9404.0
min latency: 0.0
[<matplotlib.lines.Line2D at 0x2530244f7f0>]



CloudSQL

myinstance
MySQL Second Generation master



256 Threads:

I was getting connection time out for 256 threads on local, so I had to run my client on google vm instance

```
dave_p@clientinstance: ~ - Google Chrome
https://ssh.cloud.google.com/projects/javaretest-207804/zones/us-west1-b/instances/clientinstance?authuser=1&hl=en_US&projectNumber=14494523234

dave_p@clientinstance:~$ java -jar PrakClient 256 http://35.233.184.173:8080/AnotherProjectWar/rest/myfirstapp 1 10
Error: Unable to access jarfile PrakClient
dave_p@clientinstance:~$ java -jar PrakClient.jar 256 http://35.233.184.173:8080/AnotherProjectWar/rest/myfirstapp
1 100000 100
inside : main
number of warmup threads 25
Running phase Warmup
number of threads submitted25
37500
number of loadingThreads 128
Running phase Loading
number of threads submitted128
357500
number of peak threads 256
Running phase Peak
number of threads submitted256
1745500
number of coolDownThreads 64
Running phase Cooldown
number of threads submitted64
=====
Total Requests 1925500
Failed Requests 0
Closed File
dave_p@clientinstance:~$ Connected, host fingerprint: ssh-rsa 0 CD:09:88:98:F0:42:A4:24:6B:EA:AF:33:97:33:75:CC:1F:
28:17:81:AD:92:43:FE:78:46:87:A4:9F:43:0B:05
Linux clientinstance 4.9.0-8-amd64 #1 SMP Debian 4.9.130-2 (2018-10-27) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Fri Dec 7 02:32:10 2018 from 173.194.94.100
dave_p@clientinstance:~$
```

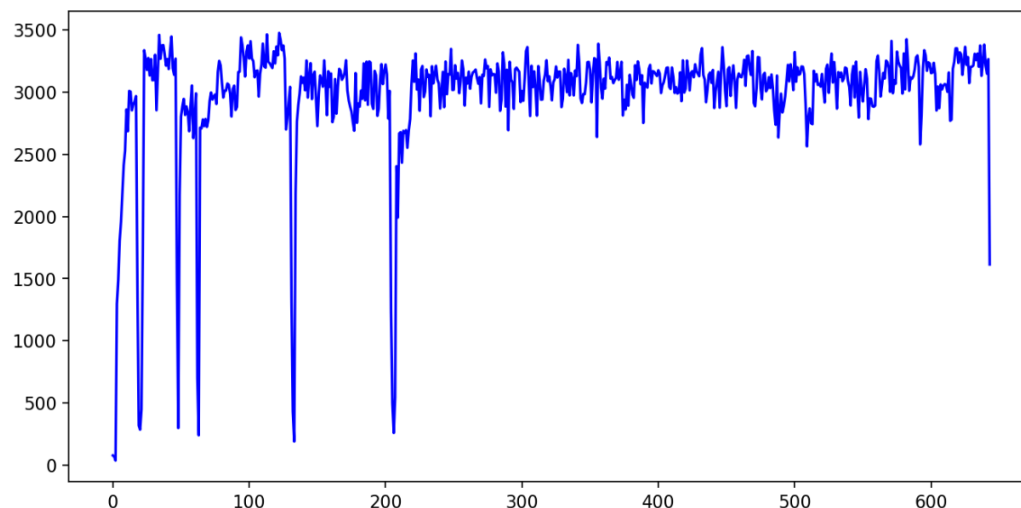
Stats:

```
print("wallTime: ", wallTime, "seconds")
print("throughput: ", throughput)
print("median Latency: ", medianLatency, " milliseconds")
print("95th percentile latency: ", Latency[index95], "milliseconds")
print("99th percentile latency: ", Latency[index99], "milliseconds")
```

```
wallTime: 643.877 seconds
throughput: 2990
median Latency: 65 milliseconds
95th percentile latency: 140.0 milliseconds
99th percentile latency: 203.0 milliseconds
```

Throughput:

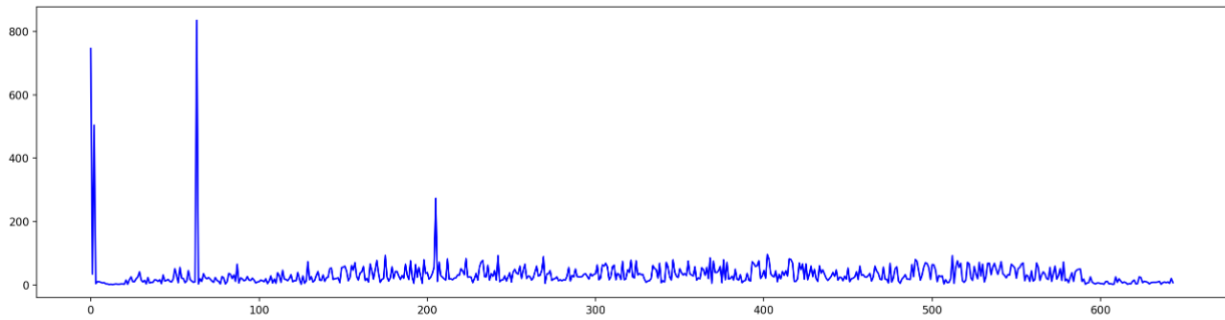
<matplotlib.lines.Line2D at 0x2530d27b6d8>



Latency:

max latency: 3571.0
min latency: 1.0

[<matplotlib.lines.Line2D at 0x25309abef28>]



CloudSQL

✓ myinstance

MySQL Second Generation master

OVERVIEW

CONNECTIONS

USERS

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Active connections ▾

1 hour 6 hours 12 hours 1 day 2 days 4 days 7 days 14 days 30 days

Connections

Dec 6, 2018 8:27 PM



● Active connections (myinstance): 1,054.00

350 Threads

```
dave_pcclientinstance:~$ java -jar PrakClient.jar 350 http://35.233.184.173:8080/AnotherProjectWar/rest/myfirstapp 1 100000 100
inside : main
number of warmup threads 35
Running phase Warmup
number of threads submitted35
52500
number of loadingThreads 175
Running phase Loading
number of threads submitted175
490000
number of peak threads 350
Running phase Peak
number of threads submitted350
2415000
number of coolDownThreads 87
Running phase Cooldown
number of threads submitted87
=====
Total Requests 2632500
Failed Requests 0
Closed File
dave_pcclientinstance:~$
```

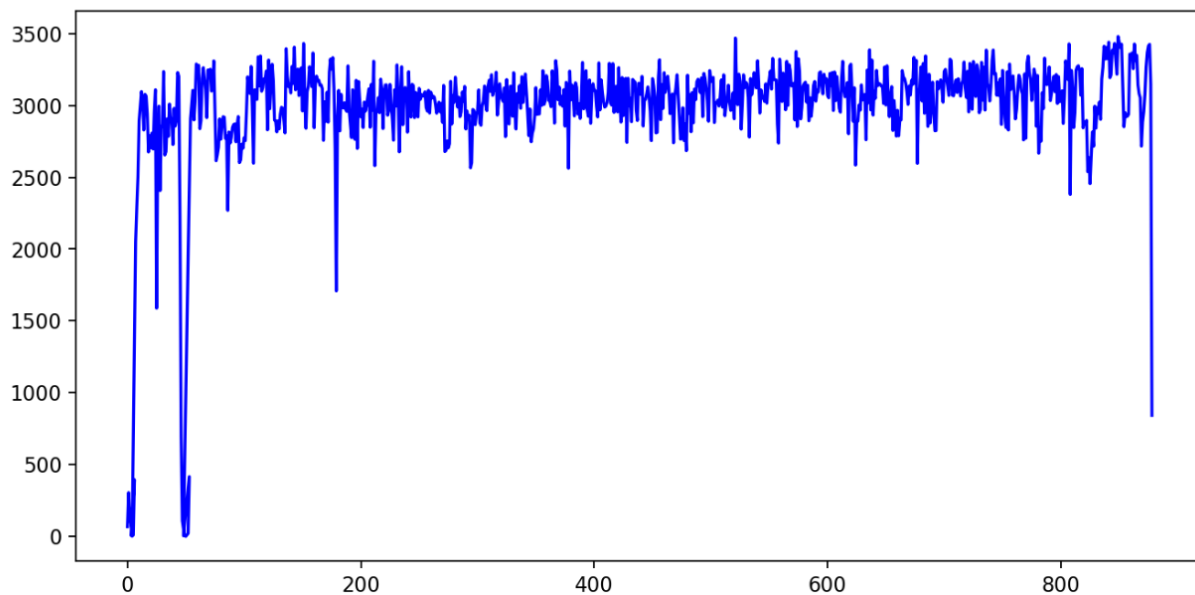
Stats

```
print("wallTime: ", wallTime, "seconds")
print("throughput: ", throughput)
print("median Latency: ", medianLatency, " milliseconds")
print("95th percentile latency: ", Latency[index95], "milliseconds")
print("99th percentile latency: ", Latency[index99], "milliseconds")
```

```
wallTime: 878.4 seconds
throughput: 2996
median Latency: 96 milliseconds
95th percentile latency: 190.0 milliseconds
99th percentile latency: 251.0 milliseconds
```

Throughput:

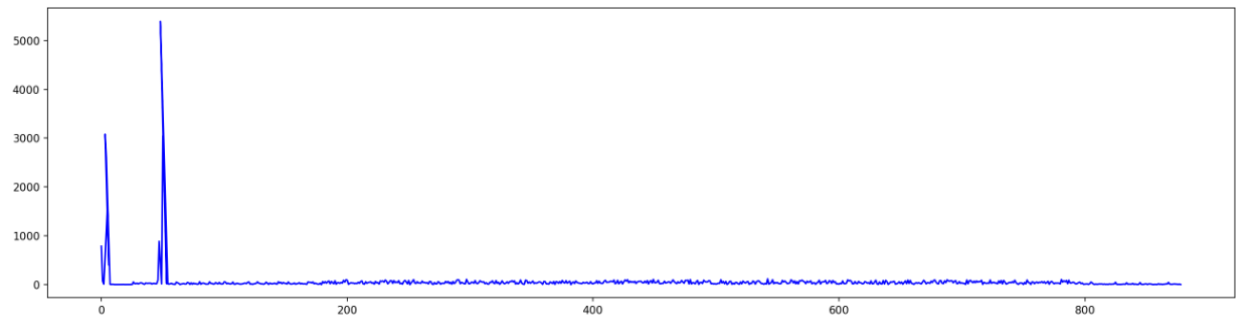
```
: [matplotlib.lines.Line2D at 0x2531d8c5588]
```



Latency:

max latency: 6799.0
min latency: 1.0

[<matplotlib.lines.Line2D at 0x2531efcf198>]



Wall Time (in seconds) Comparison between EC2 and GCP VM instance:

	32 Threads	64 Threads	128 Threads	256 Threads
EC2	133	172	404	728
GCP VM	338	382	554	643

So, as it can be observed EC2 is still faster than GCP, to be fair, my client runs locally for GCP and for EC2 it runs on EC2 instance. But still, the difference is pretty huge and it looks like I would prefer to run my server on AWS instance over GCP

Google Cloud Load Balancer:

32 Threads

Load Balancer:

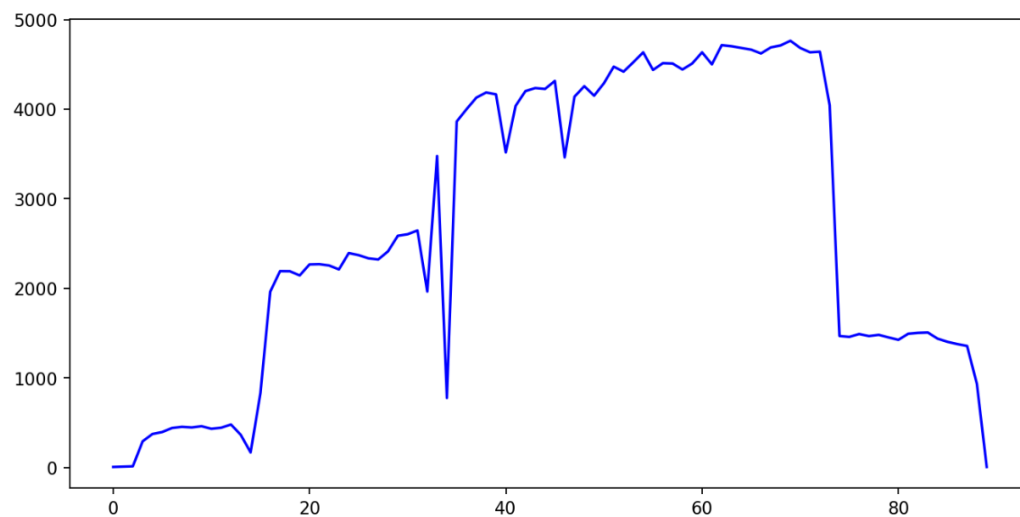
```
dave_p@client:~$  
dave_p@client:~$  
dave_p@client:~$  
dave_p@client:~$ java -jar PrakClient.jar 32 http://35.244.141.197:8080/AnotherProjectWar/rest/myfirstapp 1 100000  
100  
inside : main  
number of warmup threads 3  
Running phase Warmup  
number of threads submitted3  
4500  
number of loadingThreads 16  
Running phase Loading  
number of threads submitted16  
44500  
number of peak threads 32  
Running phase Peak  
number of threads submitted32  
220500  
number of coolDownThreads 8  
Running phase Cooldown  
number of threads submitted8  
=====  
Total Requests 240500  
Failed Requests 0  
Closed File
```

Stats:

```
print("wallTime: ", wallTime, "seconds")  
print("throughput: ", throughput)  
print("median Latency: ", medianLatency, " milliseconds")  
print("95th percentile latency: ", Latency[index95], "milliseconds")  
print("99th percentile latency: ", Latency[index99], "milliseconds")
```

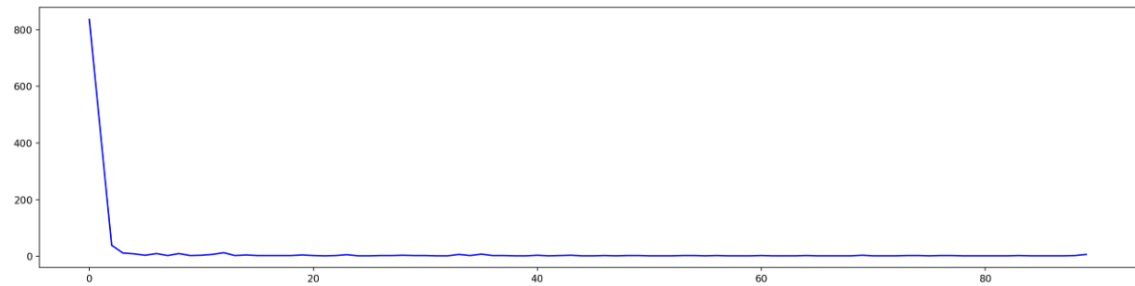
```
wallTime: 89.027 seconds  
throughput: 2701  
median Latency: 7 milliseconds  
95th percentile latency: 15.0 milliseconds  
99th percentile latency: 21.0 milliseconds
```

Throughput:

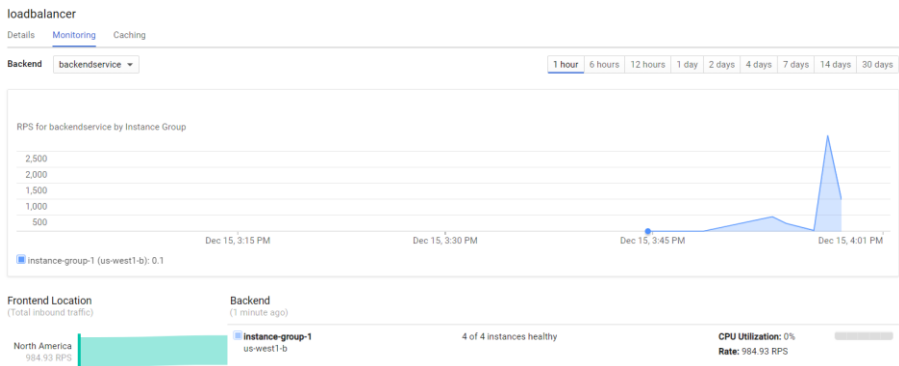


Latency:

max latency: 2911.0
min latency: 1.0
[<matplotlib.lines.Line2D at 0x1d8a8577e80>]



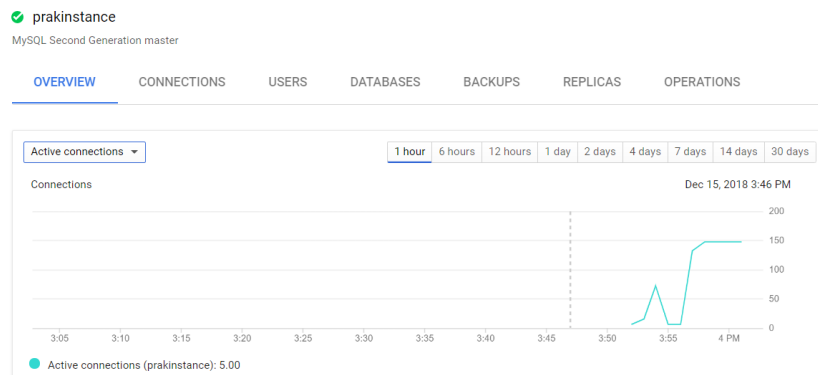
Load Balancer:



Instance Groups:

<input type="checkbox"/>	Name	Creation time	Template	Internal IP	External IP	Connect
<input type="checkbox"/>	<input checked="" type="checkbox"/> instance-group-1-3w56	Dec 15, 2018, 3:56:40 PM	instance-tomcat	10.138.0.7 (nic0)	35.247.7.225 ↗	SSH ▾
<input type="checkbox"/>	<input checked="" type="checkbox"/> instance-group-1-8jsj	Dec 14, 2018, 4:58:02 PM	instance-tomcat	10.138.0.2 (nic0)	35.230.35.253 ↗	SSH ▾
<input type="checkbox"/>	<input checked="" type="checkbox"/> instance-group-1-lnzh	Dec 15, 2018, 3:53:05 PM	instance-tomcat	10.138.0.6 (nic0)	35.230.30.102 ↗	SSH ▾
<input type="checkbox"/>	<input checked="" type="checkbox"/> instance-group-1-wht7	Dec 15, 2018, 3:56:54 PM	instance-tomcat	10.138.0.8 (nic0)	35.247.66.107 ↗	SSH ▾

SQL instance active connections:



64 Threads

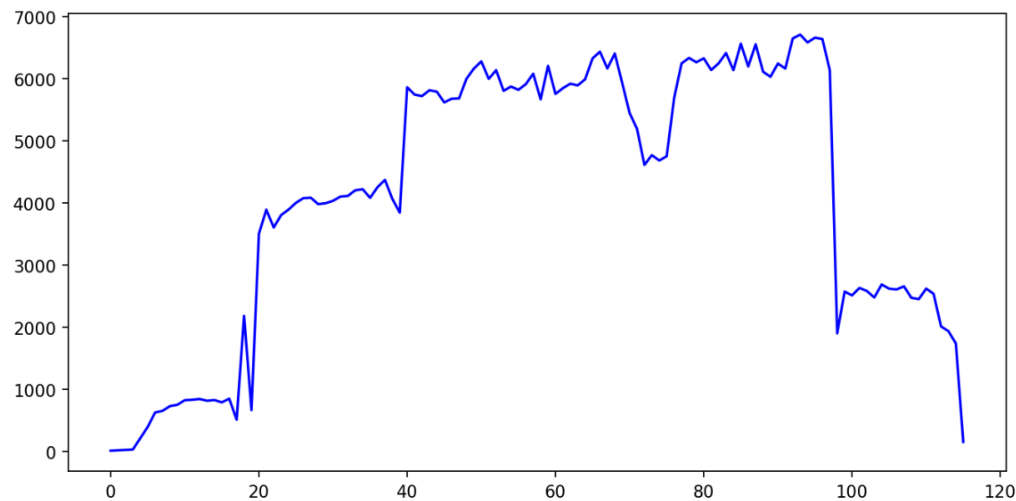
```
dave_p@client:~$ java -jar PrakClient.jar 64 http://35.244.141.197:8080/AnotherProjectWar/rest/myfirstapp 1 100000
100
inside : main
number of warmup threads 6
Running phase Warmup
number of threads submitted6
9000
number of loadingThreads 32
Running phase Loading
number of threads submitted32
89000
number of peak threads 64
Running phase Peak
number of threads submitted64
441000
number of coolDownThreads 16
Running phase Cooldown
number of threads submitted16
=====
Total Requests 481000
Failed Requests 0
Closed File
dave_p@client:~$
```

Stats:

```
print("wallTime: ", wallTime, "seconds")
print("throughput: ", throughput)
print("median Latency: ", medianLatency, " milliseconds")
print("95th percentile latency: ", Latency[index95], "milliseconds")
print("99th percentile latency: ", Latency[index99], "milliseconds")
```

```
wallTime: 115.373 seconds
throughput: 4169
median Latency: 9 milliseconds
95th percentile latency: 23.0 milliseconds
99th percentile latency: 31.0 milliseconds
```

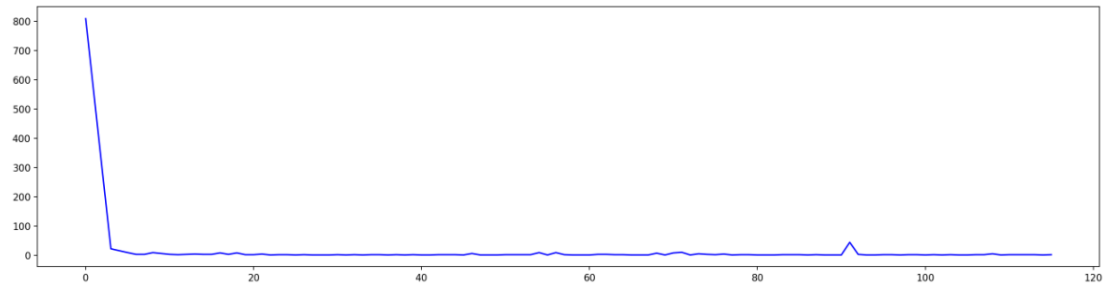
Throughput:



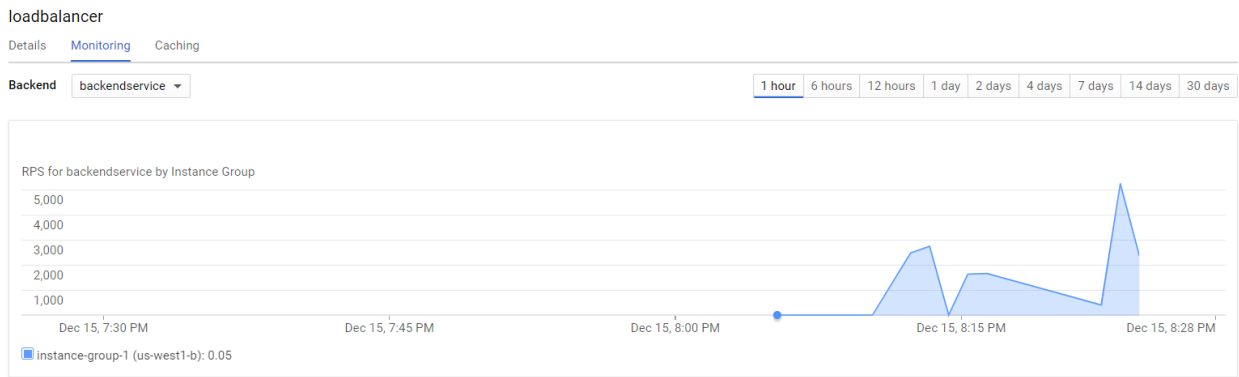
Latency:

max latency: 3153.0
min latency: 1.0

[<matplotlib.lines.Line2D at 0x1d8a7163710>]




Load Balancer

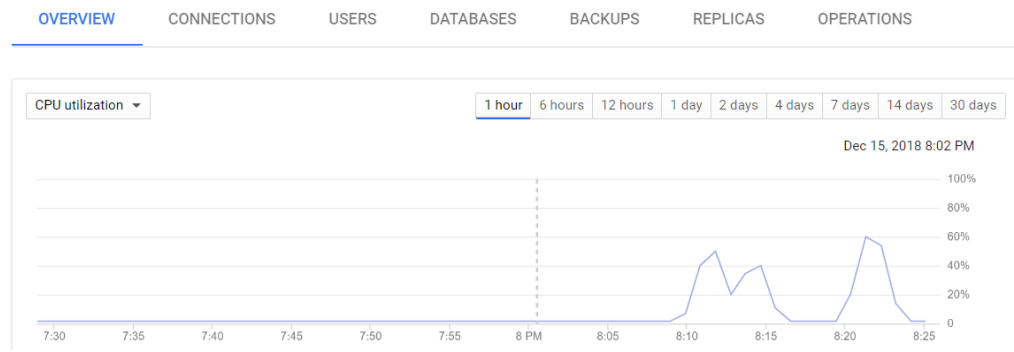


VM instances:

<input type="checkbox"/>	Name	Creation time	Template	Internal IP	External IP	Connect
<input type="checkbox"/>	<input checked="" type="checkbox"/> instance-group-1-0z6n	Dec 15, 2018, 8:15:29 PM	instance-tomcat	10.138.0.8 (nic0)	35.247.66.107 ↗	SSH ▼
<input type="checkbox"/>	<input checked="" type="checkbox"/> instance-group-1-53w7	Dec 15, 2018, 8:12:08 PM	instance-tomcat	10.138.0.7 (nic0)	35.247.36.63 ↗	SSH ▼
<input type="checkbox"/>	<input checked="" type="checkbox"/> instance-group-1-5hx8	Dec 15, 2018, 5:15:06 PM	instance-tomcat	10.138.0.6 (nic0)	35.230.30.102 ↗	SSH ▼
<input type="checkbox"/>	<input checked="" type="checkbox"/> instance-group-1-dzgd	Dec 15, 2018, 8:15:29 PM	instance-tomcat	10.138.0.9 (nic0)	35.203.148.153 ↗	SSH ▼
<input type="checkbox"/>	<input checked="" type="checkbox"/> instance-group-1-flfp	Dec 15, 2018, 8:11:42 PM	instance-tomcat	10.138.0.2 (nic0)	35.230.35.253 ↗	SSH ▼

Cloud SQL active connections:

 prakinstance
MySQL Second Generation master



128 Threads

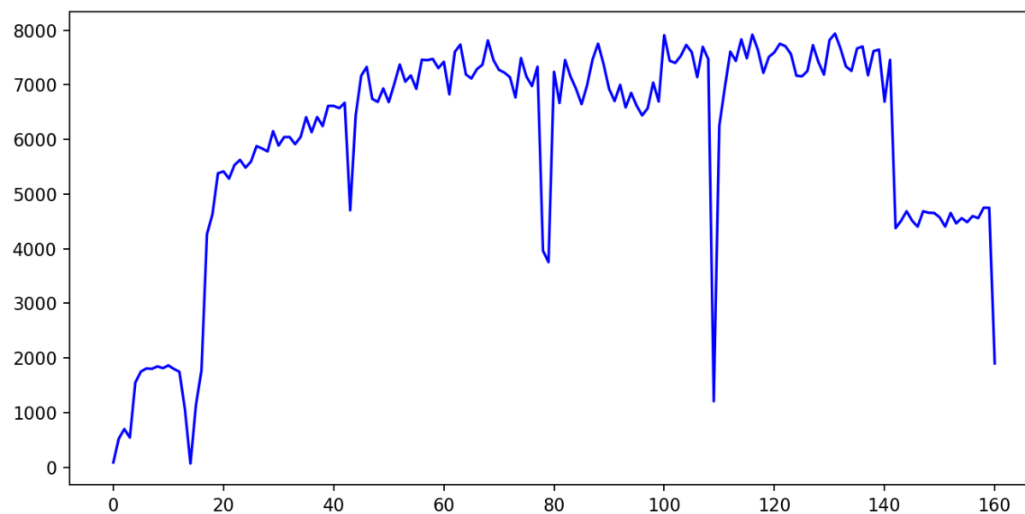
```
dave p@client:~$ java -jar PrakClient.jar 128 http://35.244.141.197:8080/AnotherProjectWar/rest/myfirstapp 1 100000 100
inside : main
number of warmup threads 12
Running phase Warmup
number of threads submitted12
18000
number of loadingThreads 64
Running phase Loading
number of threads submitted64
178000
number of peak threads 128
Running phase Peak
number of threads submitted128
882000
number of coolDownThreads 32
Running phase Cooldown
number of threads submitted32
=====
Total Requests 962000
Failed Requests 0
Closed File
```

Stats:

```
print("wallTime: ", wallTime, "seconds")
print("throughput: ", throughput)
print("median Latency: ", medianLatency, " milliseconds")
print("95th percentile latency: ", Latency[index95], "milliseconds")
print("99th percentile latency: ", Latency[index99], "milliseconds")
```

```
wallTime: 160.766 seconds
throughput: 5983
median Latency: 12 milliseconds
95th percentile latency: 39.0 milliseconds
99th percentile latency: 62.0 milliseconds
```

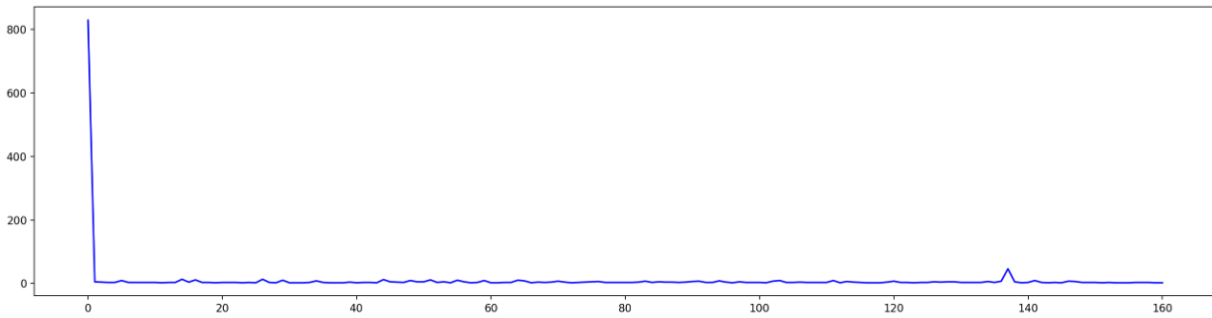
Throughput:



Latency:

max latency: 1565.0
min latency: 1.0

[<matplotlib.lines.Line2D at 0x1d8b696ac50>]



Loadbalancer:

loadbalancer

Details **Monitoring** Caching

Backend **backendservice**

1 hour 6 hours 12 hours 1 day 2 days 4 days 7 days 14 days 30 days

RPS for backendservice by Instance Group



instance-group-1 (us-west1-b): 64.25

CloudSQL:

✓ prakinstance

MySQL Second Generation master

OVERVIEW

CONNECTIONS

USERS

DATABASES

BACKUPS

REPLICAS

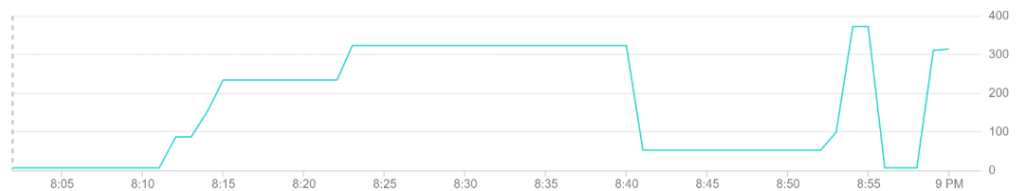
OPERATIONS

Active connections

1 hour 6 hours 12 hours 1 day 2 days 4 days 7 days 14 days 30 days

Connections

Dec 15, 2018 8:01 PM



Active connections (prakinstance): 313.00

Instance group:

✓ instance-group-1

[Members](#) [Details](#) [Monitoring](#)

Zone: **us-west1-b** Template: [instance-tomcat](#) Autoscaling: **Off** In use by: [loadbalancer](#)

<input type="checkbox"/>	Name	Creation time	Template	Internal IP	External IP	Connect
<input type="checkbox"/>	✓ instance-group-1-0z6n	Dec 15, 2018, 8:15:29 PM	instance-tomcat	10.138.0.8 (nic0)	35.247.66.107 ↗	SSH ▼
<input type="checkbox"/>	✓ instance-group-1-44r6	Dec 15, 2018, 8:40:20 PM	instance-tomcat	10.138.0.6 (nic0)	35.227.156.135 ↗	SSH ▼
<input type="checkbox"/>	✓ instance-group-1-66qj	Dec 15, 2018, 8:40:20 PM	instance-tomcat	10.138.0.2 (nic0)	35.247.7.225 ↗	SSH ▼
<input type="checkbox"/>	✓ instance-group-1-rxj6	Dec 15, 2018, 8:40:20 PM	instance-tomcat	10.138.0.11 (nic0)	104.196.253.125 ↗	SSH ▼
<input type="checkbox"/>	✓ instance-group-1-s6h3	Dec 15, 2018, 8:40:20 PM	instance-tomcat	10.138.0.7 (nic0)	35.230.79.135 ↗	SSH ▼

256Threads:

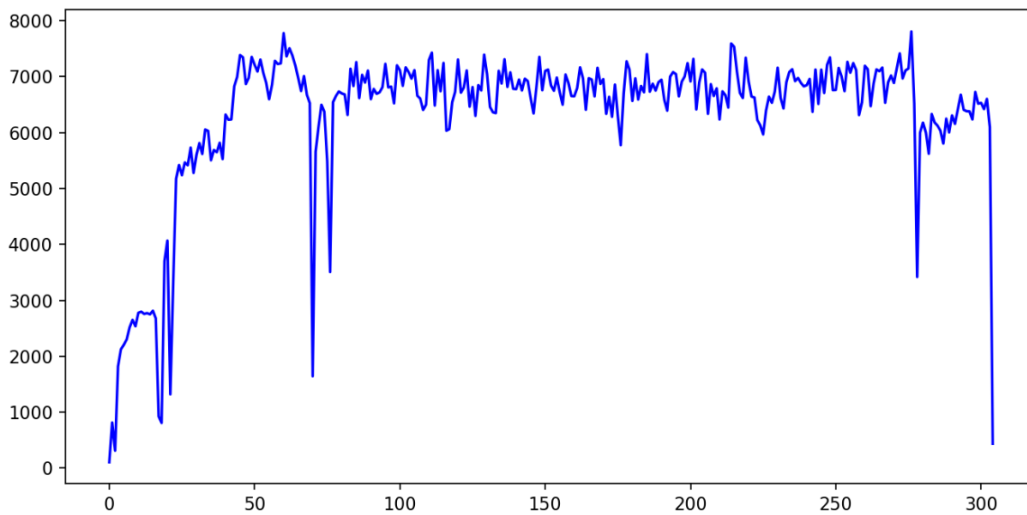
```
dave_p@client:~$ java -jar PrakClient.jar 256 http://35.244.141.197:8080/AnotherProjectWar/rest/myfirstapp 1 100000 100
inside : main
number of warmup threads 25
Running phase Warmup
number of threads submitted25
37500
number of loadingThreads 128
Running phase Loading
number of threads submitted128
357500
number of peak threads 256
Running phase Peak
number of threads submitted256
1765500
number of coolDownThreads 64
Running phase Cooldown
number of threads submitted64
=====
Total Requests 1925500
Failed Requests 0
Closed File
dave_p@client:~$
```

Stats:

```
print("wallTime: ", wallTime, "seconds")
print("throughput: ", throughput)
print("median Latency: ", medianLatency, " milliseconds")
print("95th percentile latency: ", Latency[index95], "milliseconds")
print("99th percentile latency: ", Latency[index99], "milliseconds")
```

```
wallTime: 304.285 seconds
throughput: 6327
median Latency: 19 milliseconds
95th percentile latency: 108.0 milliseconds
99th percentile latency: 180.0 milliseconds
```

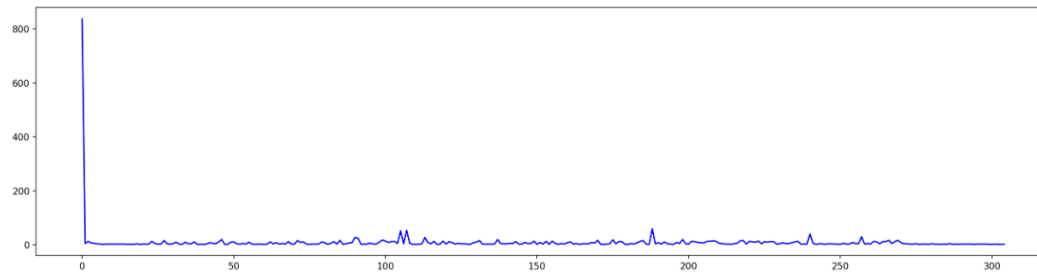
Throughput:



Latency:

max latency: 1381.0
min latency: 1.0

[<matplotlib.lines.Line2D at 0x1d8b350f7f0>]



CloudSQL

✓ prakinstance

MySQL Second Generation master

OVERVIEW

CONNECTIONS

USERS

DATABASES

BACKUPS

REPLICAS

OPERATIONS

Active connections ▾

1 hour 6 hours 12 hours 1 day 2 days 4 days 7 days 14 days 30 days

Connections

Dec 15, 2018 8:34 PM



● Active connections (prakinstance): 321.00

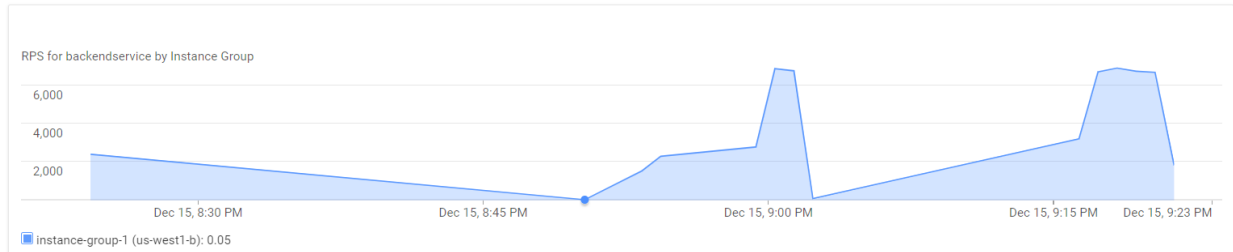
LoadBalancer:

loadbalancer

Details **Monitoring** Caching

Backend **backendservice**

1 hour 6 hours 12 hours 1 day 2 days 4 days 7 days 14 days 30 days



Instance group:

<input type="checkbox"/>	<input checked="" type="checkbox"/>	instance-group-1-0z6n	us-west1-b	Dec 15, 2018, 8:15:29 PM	1 vCPU, 3.75 GB	10.138.0.8 (nic0)	35.247.66.107 ↗	SSH	▼	⋮
<input type="checkbox"/>	<input checked="" type="checkbox"/>	instance-group-1-44r6	us-west1-b	Dec 15, 2018, 8:40:20 PM	1 vCPU, 3.75 GB	10.138.0.6 (nic0)	35.227.156.135 ↗	SSH	▼	⋮
<input type="checkbox"/>	<input checked="" type="checkbox"/>	instance-group-1-66qj	us-west1-b	Dec 15, 2018, 8:40:20 PM	1 vCPU, 3.75 GB	10.138.0.2 (nic0)	35.247.7.225 ↗	SSH	▼	⋮
<input type="checkbox"/>	<input checked="" type="checkbox"/>	instance-group-1-rxj6	us-west1-b	Dec 15, 2018, 8:40:20 PM	1 vCPU, 3.75 GB	10.138.0.11 (nic0)	104.196.253.125 ↗	SSH	▼	⋮
<input type="checkbox"/>	<input checked="" type="checkbox"/>	instance-group-1-s6h3	us-west1-b	Dec 15, 2018, 8:40:20 PM	1 vCPU, 3.75 GB	10.138.0.7 (nic0)	35.230.79.135 ↗	SSH	▼	⋮

512Threads:

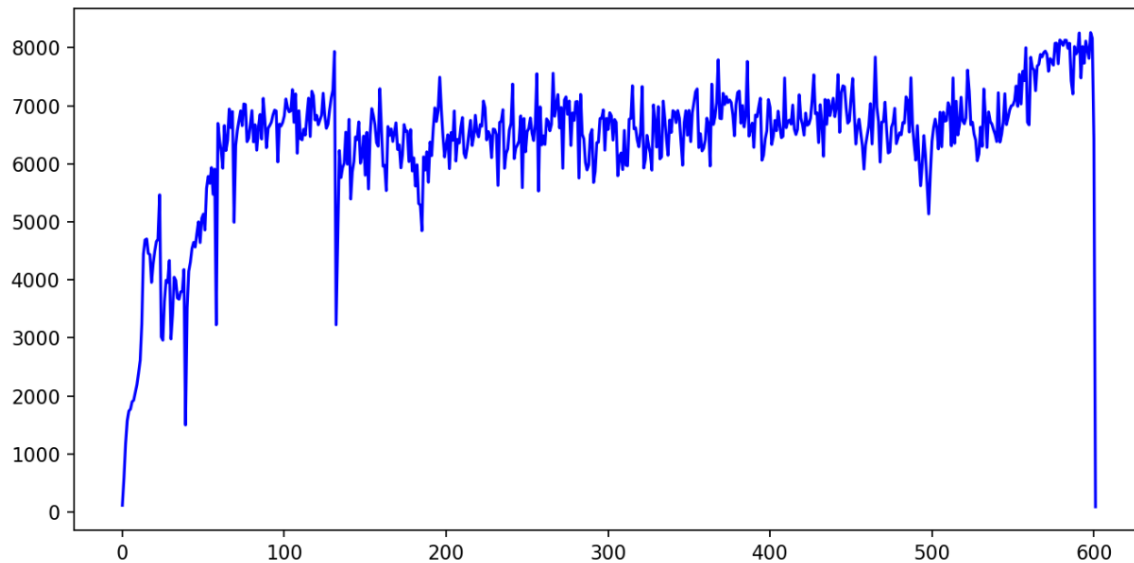
```
dave p@client:~$ java -jar PrakClient.jar 512 http://35.244.141.197:8080/AnotherProjectWar/rest/myfirstapp 1 100000 100
inside : main
number of warmup threads 51
Running phase Warmup
number of threads submitted51
76500
number of loadingThreads 256
Running phase Loading
number of threads submitted256
716500
number of peak threads 512
Running phase Peak
number of threads submitted512
3532500
number of coolDownThreads 128
Running phase Cooldown
number of threads submitted128
=====
Total Requests 3852500
Failed Requests 0
Closed File
```

Stats:

```
print("wallTime: ", wallTime, "seconds")
print("throughput: ", throughput)
print("median Latency: ", medianLatency, " milliseconds")
print("95th percentile latency: ", Latency[index95], "milliseconds")
print("99th percentile latency: ", Latency[index99], "milliseconds")
```

```
wallTime: 601.19 seconds
throughput: 6408
median Latency: 36 milliseconds
95th percentile latency: 227.0 milliseconds
99th percentile latency: 353.0 milliseconds
```

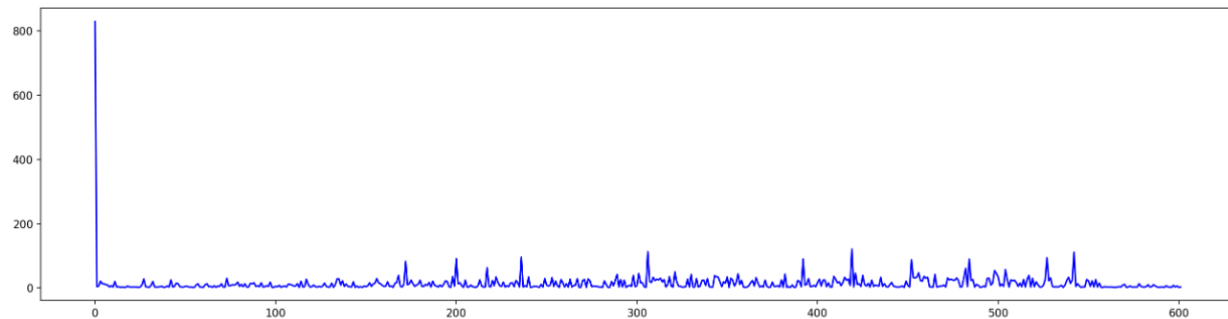
Throughput:



Latency:

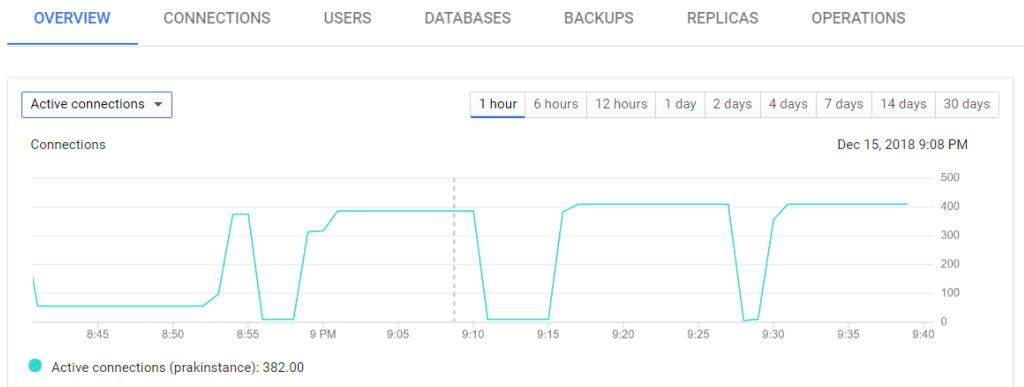
```
max latency: 1526.0
min latency: 1.0
```

```
[<matplotlib.lines.Line2D at 0x1d8ba745f28>]
```

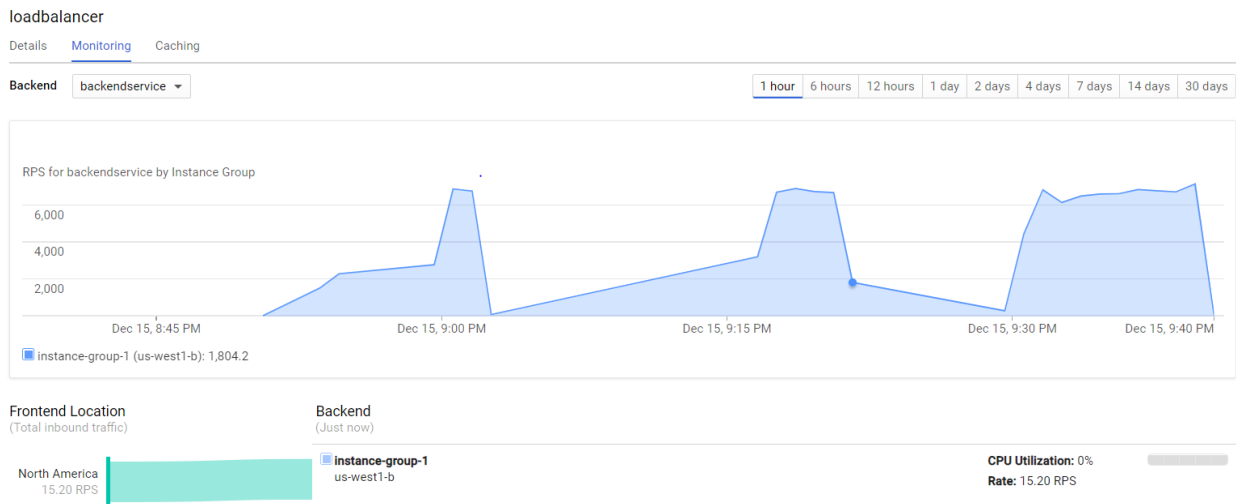


CloudSQL

prakinstance
MySQL Second Generation master



Loadbalancer:



Wall Time (in seconds) Comparison between AWS and GCP Load Balancer:

Load Balancer	32 Threads	64 Threads	128 Threads	256 Threads
AWS	132	217	426	600
GCP VM	89	115	160	304

Looks like Load balancer was faster on GCP than AWS. Although many factors contribute to this for example, the auto scaling policy and max connections with Mysql data base are different in both cases.