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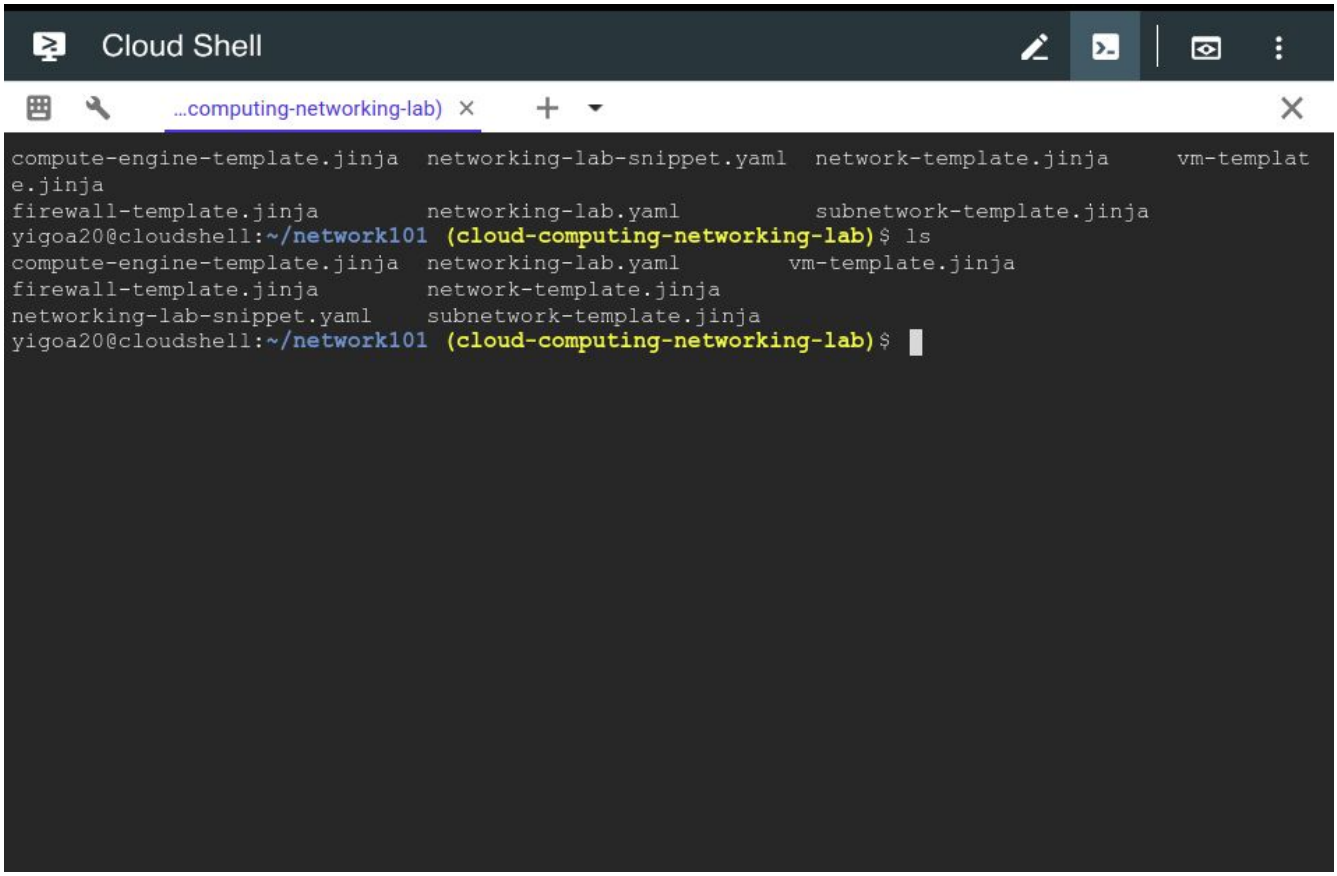
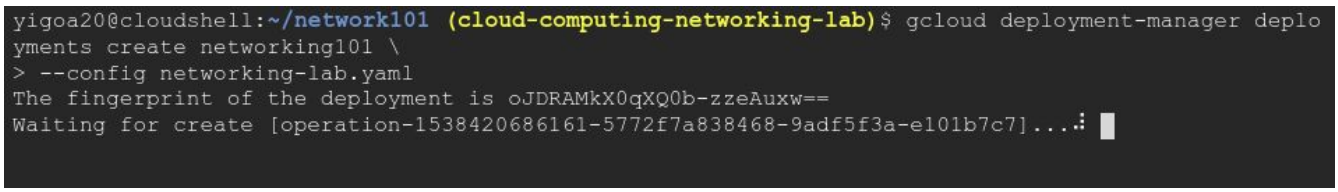
Cloud Computing
October 1, 2018

Assignment 2: Google cloud Report

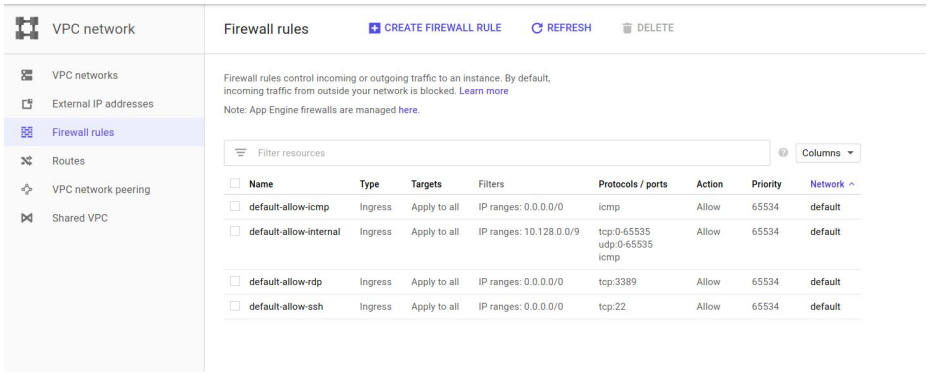
These are the procedures followed in the Google Cloud platform:

The first process is to set up the instances on the platform, so the following picture illustrates this procedure:





The following is the firewall rules from the console and the terminal:




```
{#
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limitations under the License.
#}

resources:
- name: {{ env["name"] }}-allow-internal
  type: compute.v1.firewall
  properties:
    network: $(ref.{{ properties["network"] }}.selfLink)
    sourceRanges: ["10.0.0.0/8"]
    allowed:
    - IPProtocol: TCP
      ports: ["0-65535"]
    - IPProtocol: UDP
      ports: ["0-65535"]
    - IPProtocol: ICMP
- name: {{ env["name"] }}-allow-ssh
  type: compute.v1.firewall
  properties:
    network: $(ref.{{ properties["network"] }}.selfLink)
    sourceRanges: ["0.0.0.0/0"]
    allowed:
    - IPProtocol: TCP
      ports: ["22"]
- name: {{ env["name"] }}-allow-icmp
  type: compute.v1.firewall
  properties:
    network: $(ref.{{ properties["network"] }}.selfLink)
```
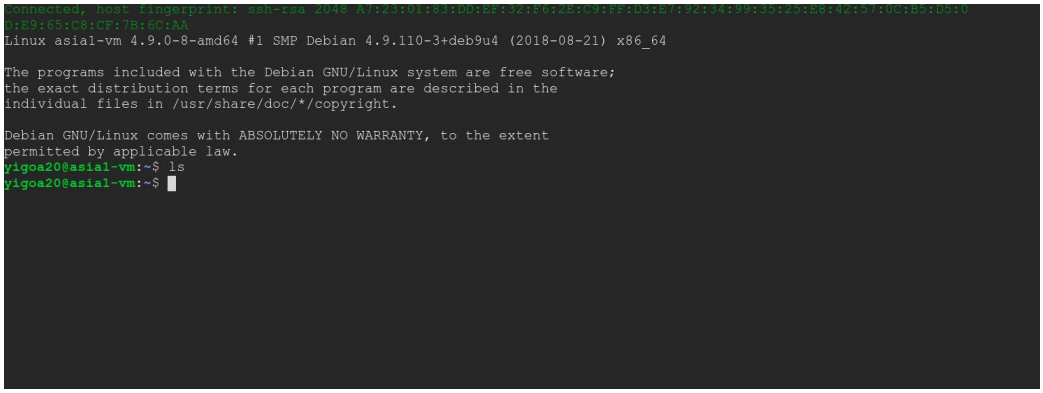
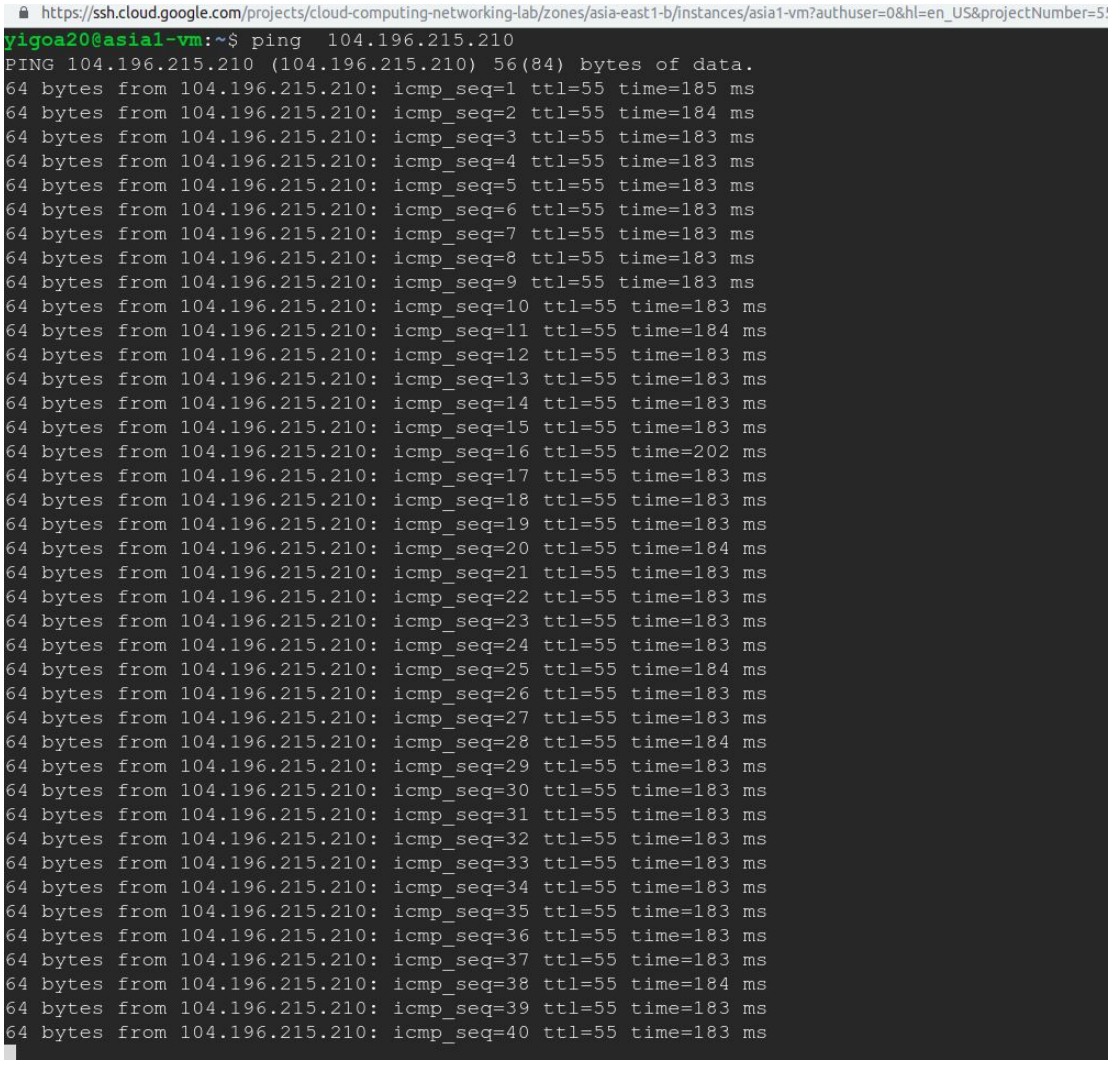

After all the configuration setup I was able to login in the instance using the SSH command illustrates by the following picture:



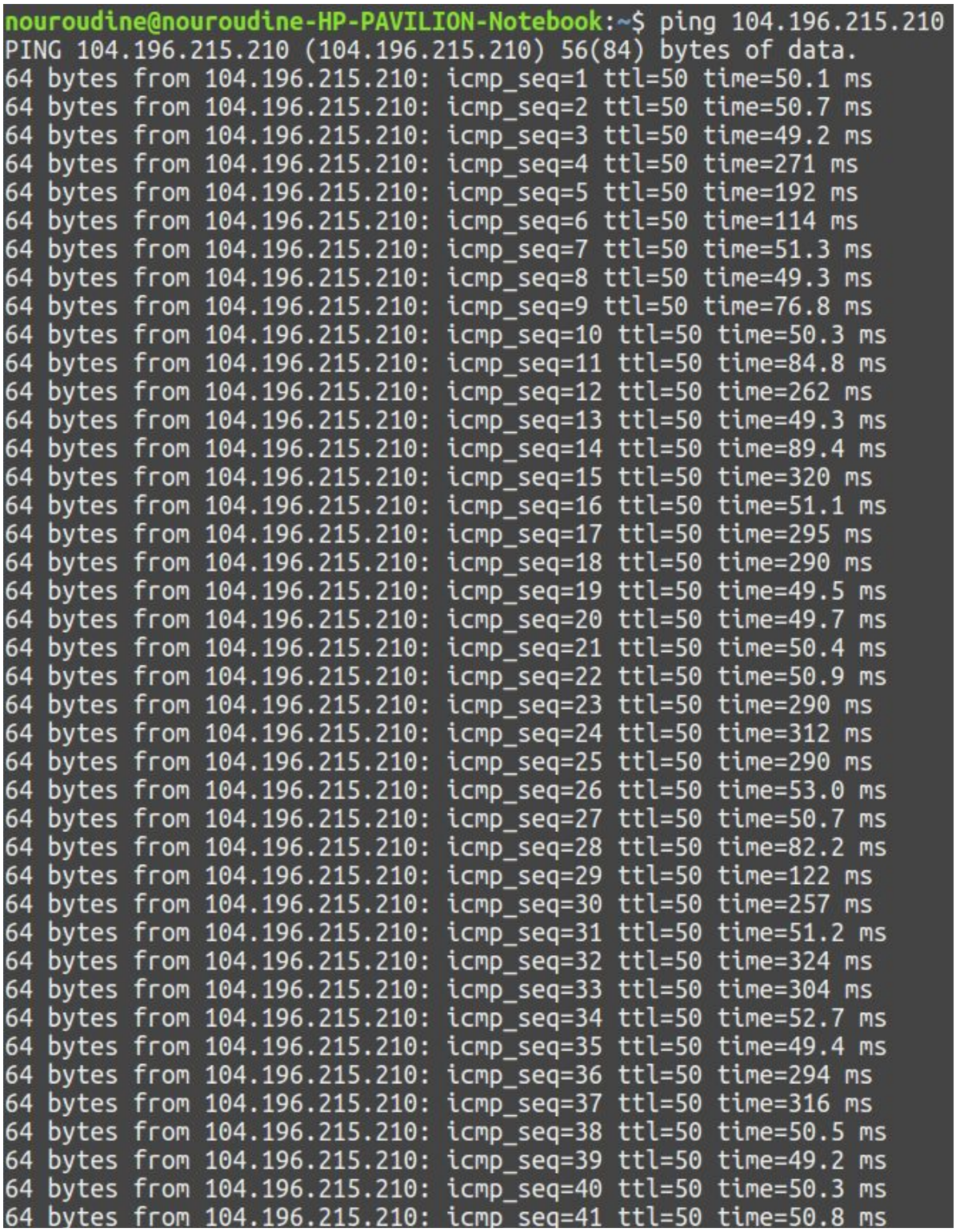
The next step was to use a ping command between two different instances to observe the latency:
This following illustration is showing a time between an instance from the US and Asia.



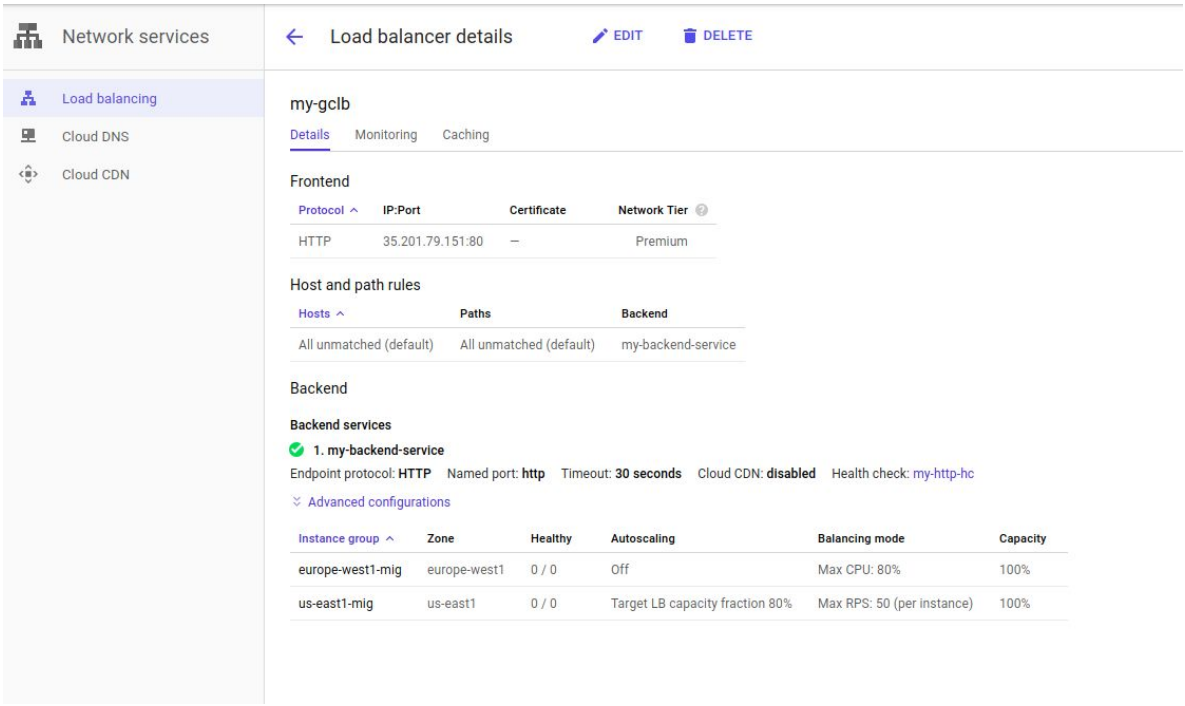
I have also performed a test within the US instances, so the following picture is a test on those instances (us-east1-b to us-west1-b):

```
yigoa20@e1-vm:~$ ping 35.233.180.195
PING 35.233.180.195 (35.233.180.195) 56(84) bytes of data.
64 bytes from 35.233.180.195: icmp_seq=1 ttl=57 time=68.4 ms
64 bytes from 35.233.180.195: icmp_seq=2 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=3 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=4 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=5 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=6 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=7 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=8 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=9 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=10 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=11 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=12 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=13 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=14 ttl=57 time=67.1 ms
64 bytes from 35.233.180.195: icmp_seq=15 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=16 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=17 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=18 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=19 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=20 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=21 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=22 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=23 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=24 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=25 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=26 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=27 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=28 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=29 ttl=57 time=66.8 ms
64 bytes from 35.233.180.195: icmp_seq=30 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=31 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=32 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=33 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=34 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=35 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=36 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=37 ttl=57 time=66.6 ms
64 bytes from 35.233.180.195: icmp_seq=38 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=39 ttl=57 time=66.7 ms
64 bytes from 35.233.180.195: icmp_seq=40 ttl=57 time=66.7 ms
```

The last test was from my machine to another instance:



The next step is to create a load balancer to manage traffic from in the backend and frontend using the HTTP protocol. Therefore, the following illustration is showing then configuration interface.

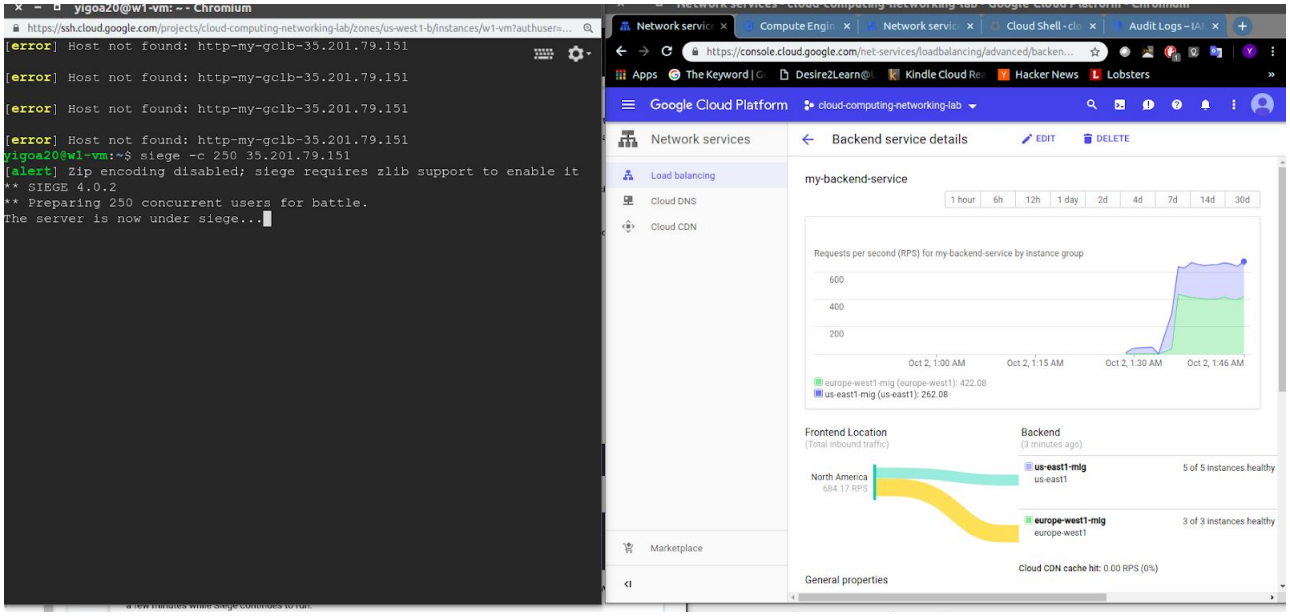


I have tried to ping the load balancer and this is the result:

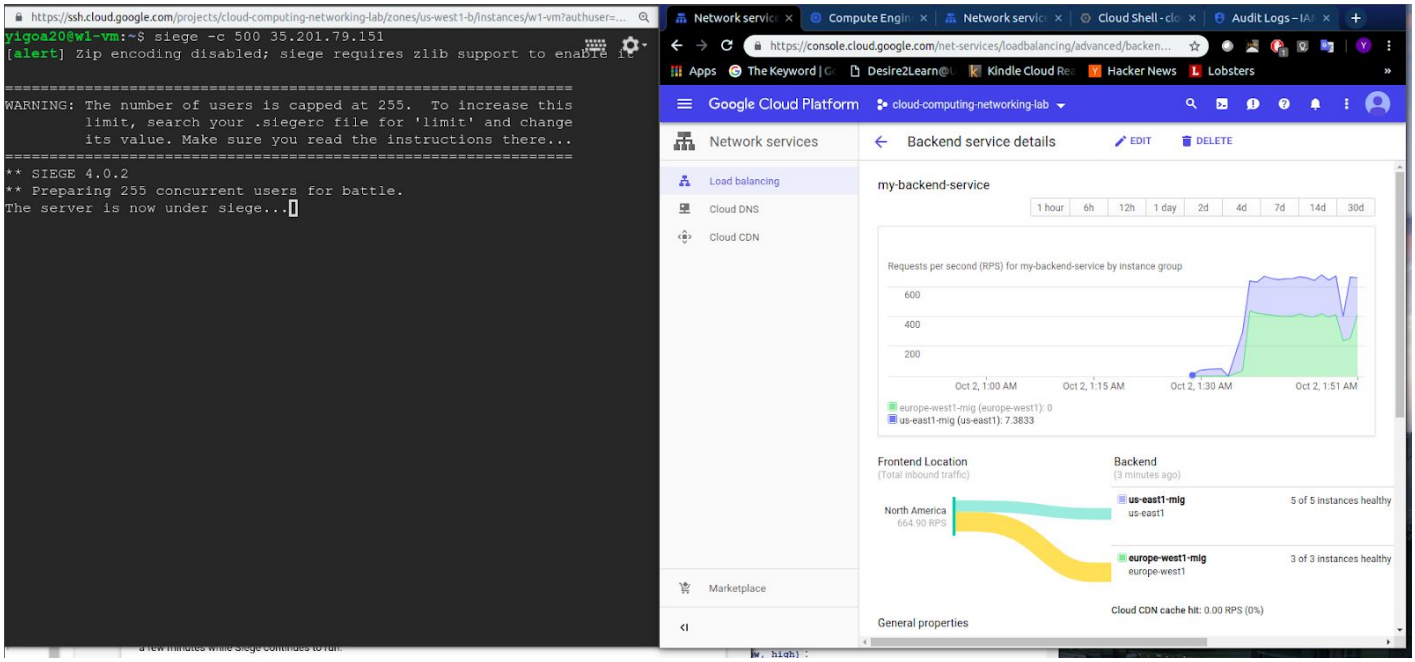
```
nouroudine@nouroudine-HP-PAVILION-Notebook:~$ ping 35.201.79.1
PING 35.201.79.151 (35.201.79.151) 56(84) bytes of data.
64 bytes from 35.201.79.151: icmp_seq=1 ttl=50 time=116 ms
64 bytes from 35.201.79.151: icmp_seq=2 ttl=50 time=16.0 ms
64 bytes from 35.201.79.151: icmp_seq=3 ttl=50 time=46.3 ms
64 bytes from 35.201.79.151: icmp_seq=4 ttl=50 time=15.6 ms
64 bytes from 35.201.79.151: icmp_seq=5 ttl=50 time=16.0 ms
64 bytes from 35.201.79.151: icmp_seq=6 ttl=50 time=15.7 ms
64 bytes from 35.201.79.151: icmp_seq=7 ttl=50 time=15.9 ms
64 bytes from 35.201.79.151: icmp_seq=8 ttl=50 time=50.7 ms
64 bytes from 35.201.79.151: icmp_seq=9 ttl=50 time=21.0 ms
64 bytes from 35.201.79.151: icmp_seq=10 ttl=50 time=15.9 ms
64 bytes from 35.201.79.151: icmp_seq=11 ttl=50 time=16.6 ms
64 bytes from 35.201.79.151: icmp_seq=12 ttl=50 time=15.7 ms
64 bytes from 35.201.79.151: icmp_seq=13 ttl=50 time=16.6 ms
64 bytes from 35.201.79.151: icmp_seq=14 ttl=50 time=15.4 ms
64 bytes from 35.201.79.151: icmp_seq=15 ttl=50 time=17.6 ms
64 bytes from 35.201.79.151: icmp_seq=16 ttl=50 time=15.3 ms
64 bytes from 35.201.79.151: icmp_seq=17 ttl=50 time=18.8 ms
64 bytes from 35.201.79.151: icmp_seq=18 ttl=50 time=21.8 ms
64 bytes from 35.201.79.151: icmp_seq=19 ttl=50 time=15.6 ms
64 bytes from 35.201.79.151: icmp_seq=20 ttl=50 time=16.4 ms
64 bytes from 35.201.79.151: icmp_seq=21 ttl=50 time=16.1 ms
64 bytes from 35.201.79.151: icmp_seq=22 ttl=50 time=15.4 ms
64 bytes from 35.201.79.151: icmp_seq=23 ttl=50 time=17.0 ms
64 bytes from 35.201.79.151: icmp_seq=24 ttl=50 time=18.7 ms
64 bytes from 35.201.79.151: icmp_seq=25 ttl=50 time=20.7 ms
64 bytes from 35.201.79.151: icmp_seq=26 ttl=50 time=16.5 ms
64 bytes from 35.201.79.151: icmp_seq=27 ttl=50 time=16.0 ms
64 bytes from 35.201.79.151: icmp_seq=28 ttl=50 time=16.0 ms
64 bytes from 35.201.79.151: icmp_seq=29 ttl=50 time=15.9 ms
64 bytes from 35.201.79.151: icmp_seq=30 ttl=50 time=15.8 ms
64 bytes from 35.201.79.151: icmp_seq=31 ttl=50 time=15.3 ms
64 bytes from 35.201.79.151: icmp_seq=32 ttl=50 time=17.9 ms
64 bytes from 35.201.79.151: icmp_seq=33 ttl=50 time=15.2 ms
```

The following step, I am using Siege to test the load balancer performance:

Stimulation with 250 concurrent users:



I have tried to push the stimulation to 500, but the maximum number of users is 255 according to the warning message:


https://ssh.cloud.google.com/projects/cloud-computing-networking-lab/zones/us-west1-b/instances/w1-vm?authuser=...
yigoa20@w1-vm:~$ siege -c 500 35.201.79.151
[alert] Zip encoding disabled; siege requires zlib support to enable it
WARNING: The number of users is capped at 255. To increase this
limit, search your .siegerc file for 'limit' and change
its value. Make sure you read the instructions there...
** SIEGE 4.0.2
** Preparing 255 concurrent users for battle.
The server is now under siege...
Network servic
Compute Engin
Network servic
Cloud Shell - clo
Audit Logs – IAM
https://console.cloud.google.com/net-services/loadbalancing/advanced/backen...
Apps
The Keyword | G
Desire2Learn@U
Kindle Cloud Rea
Hacker News
Lobsters
Google Cloud Platform
cloud-computing-networking-lab
Network services
Load balancing
Cloud DNS
Cloud CDN
Marketplace
Backend service details
EDIT
DELETE
my-backend-service
1 hour
6h
12h
1 day
2d
4d
7d
14d
30d
Requests per second (RPS) for my-backend-service by instance group
600
400
200
Oct 2, 1:00 AM
Oct 2, 1:15 AM
Oct 2, 1:30 AM
Oct 2, 1:51 AM
europe-west1-mig (europe-west1): 0
us-east1-mig (us-east1): 7.3833
Frontend Location
(Total inbound traffic)
North America
664.90 RPS
Backend
(3 minutes ago)
us-east1-mig
us-east1
5 of 5 instances healthy
europe-west1-mig
europe-west1
3 of 3 instances healthy
Cloud CDN cache hit: 0.00 RPS (0%)
General properties