



DevOps Lab

CLOUD COMPUTE - GCP

NETWORKING

Home tasks

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It's aiming to gain knowledge about Networking in Google Cloud.

TASK 1

Learn about two types of [load balancers in Google Cloud Platform](#):

- a L3 [Network Load Balancer](#) and
- a L7 [HTTP\(s\) Load Balancer](#).

Network Load Balancer

MINGW64:/c/ter/google-cloud-module

```
Dzmitry Mezhva@NAME-BQNMOAMNSO MINGW64 /c/ter/google-cloud-module (dmezghva)
$ gcloud compute forwarding-rules list
NAME          REGION    IP_ADDRESS    IP_PROTOCOL    TARGET
nginx-lb      europe-west1 34.77.75.177  TCP            europe-west1/targetPools/nginx-pool

Dzmitry Mezhva@NAME-BQNMOAMNSO MINGW64 /c/ter/google-cloud-module (dmezghva)
$ curl -Is 34.77.75.177
HTTP/1.1 200 OK
Server: nginx/1.14.2
Date: Wed, 02 Sep 2020 13:31:27 GMT
Content-Type: text/html
Content-Length: 786
Last-Modified: Wed, 02 Sep 2020 12:33:50 GMT
Connection: keep-alive
ETag: "5f4f912e-312"
Accept-Ranges: bytes
```

HTTP(s) Load Balancer

MINGW64:/c/ter/google-cloud-module

```
Dzmitry Mezhva@NAME-BQNMOAMNSO MINGW64 /c/ter/google-cloud-module (dmezghva)
$ gcloud compute forwarding-rules list
NAME          REGION    IP_ADDRESS    IP_PROTOCOL    TARGET
http-content-rule  europe-west1 34.120.215.200 TCP            http-lb-proxy
nginx-lb        europe-west1 34.77.75.177  TCP            europe-west1/targetPools/nginx-pool

Dzmitry Mezhva@NAME-BQNMOAMNSO MINGW64 /c/ter/google-cloud-module (dmezghva)
$ curl -s 34.120.215.200 | grep Platform
<title>Welcome to Google Cloud Platform - nginx-rjt3!</title>
<h1>Welcome to Google Cloud Platform - nginx-rjt3!</h1>
<p>If you see this page, the Google Cloud Platform - nginx-rjt3 web server is successfully installed and
<a href="http://Google Cloud Platform - nginx-rjt3.org/">nginx.org</a>.<br/>
<a href="http://Google Cloud Platform - nginx-rjt3.com/">nginx.com</a>.</p>
<p><em>Thank you for using Google Cloud Platform - nginx-rjt3.</em></p>

Dzmitry Mezhva@NAME-BQNMOAMNSO MINGW64 /c/ter/google-cloud-module (dmezghva)
$ curl -s 34.120.215.200 | grep Platform
<title>Welcome to Google Cloud Platform - nginx-91s6!</title>
<h1>Welcome to Google Cloud Platform - nginx-91s6!</h1>
<p>If you see this page, the Google Cloud Platform - nginx-91s6 web server is successfully installed and
<a href="http://Google Cloud Platform - nginx-91s6.org/">nginx.org</a>.<br/>
<a href="http://Google Cloud Platform - nginx-91s6.com/">nginx.com</a>.</p>
<p><em>Thank you for using Google Cloud Platform - nginx-91s6.</em></p>
```

Lab Link: [codelabs: LoadBalancers](#)

TASK 2

The Objectives are to learn:

- How to measure latency between Google Compute Engine [regions and zones](#)

Google Cloud Platform DevOpsLab2020-Task2 Search products and resources

VM instances CREATE INSTANCE IMPORT VM REFRESH START / RESUME STOP

Filter VM instances Columns

Name	Zone	Recommendation	In use by	Internal IP	External IP	Connect
asia1-vm	asia-east1-b			10.40.0.2 (nic0)	35.229.129.46	SSH
e1-vm	us-east1-b			10.20.0.2 (nic0)	35.231.18.178	SSH
eu1-vm	europa-west1-d			10.30.0.2 (nic0)	104.155.103.172	SSH
w1-vm	us-west1-b			10.10.0.2 (nic0)	35.233.179.92	SSH
w2-vm	us-west1-b			10.11.0.100 (nic0)	35.247.8.163	SSH

From e1-vm to eu1-vm

```

dzmitry_mezhva@e1-vm:~$ ping 10.30.0.2
PING 10.30.0.2 (10.30.0.2) 56(84) bytes of data.
64 bytes from 10.30.0.2: icmp_seq=1 ttl=64 time=96.4 ms
64 bytes from 10.30.0.2: icmp_seq=2 ttl=64 time=95.2 ms
64 bytes from 10.30.0.2: icmp_seq=3 ttl=64 time=95.1 ms
64 bytes from 10.30.0.2: icmp_seq=4 ttl=64 time=95.1 ms
^C
--- 10.30.0.2 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 95.176/95.511/96.414/0.566 ms
dzmitry_mezhva@e1-vm:~$

```

From eu1-vm to asia1-vm

```

dzmitry_mezhva@eu1-vm:~$ ping 10.40.0.2
PING 10.40.0.2 (10.40.0.2) 56(84) bytes of data.
64 bytes from 10.40.0.2: icmp_seq=1 ttl=64 time=260 ms
64 bytes from 10.40.0.2: icmp_seq=2 ttl=64 time=259 ms
64 bytes from 10.40.0.2: icmp_seq=3 ttl=64 time=259 ms
64 bytes from 10.40.0.2: icmp_seq=4 ttl=64 time=259 ms
^C
--- 10.40.0.2 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 259.307/259.676/260.587/0.638 ms
dzmitry_mezhva@eu1-vm:~$

```

- How to test network connectivity and performance using open source tools
- How to set up basic firewalling to secure your networks
- How to set up a global HTTP Load Balancer with Managed Instance Groups to automatically scale your resources up and down based on request load

Name	Zone	Recommendation	In use by	Internal IP	External IP	Connect
asia1-vm	asia-east1-b			10.40.0.2 (nic0)	35.229.129.46	SSH
e1-vm	us-east1-b			10.20.0.2 (nic0)	35.231.18.178	SSH
eu1-vm	europa-west1-d			10.30.0.2 (nic0)	104.155.103.172	SSH
europa-west1-mig-0kx5	europa-west1-d		europa-west1-mig	10.30.0.8 (nic0)	34.78.50.138	SSH
europa-west1-mig-53rf	europa-west1-c		europa-west1-mig	10.30.0.10 (nic0)	34.77.42.82	SSH
europa-west1-mig-wl8p	europa-west1-b		europa-west1-mig	10.30.0.9 (nic0)	34.78.195.228	SSH
us-east1-mig-r467	us-east1-c		us-east1-mig	10.20.0.3 (nic0)	35.190.136.253	SSH
w1-vm	us-west1-b			10.10.0.2 (nic0)	35.233.179.92	SSH
w2-vm	us-west1-b			10.11.0.100 (nic0)	35.247.8.163	SSH

- How to test and monitor your HTTP Load Balancer setup

my-gclb

Details Monitoring Caching

Backend my-backend-service

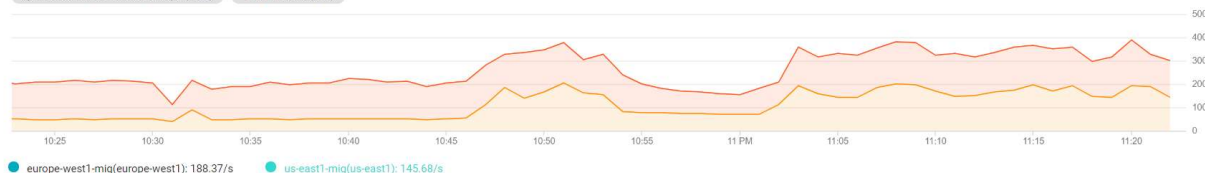
Activity for the last hour

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

RPS for my-backend-service by Instance Group

Sep 2, 2020 11:04 PM

by backend name, backend scope (sum) 1 min interval (rate)



Frontend Location
(Total inbound traffic)



Backend

us-east1-mig
us-east1

Rate: 145.30 RPS

europe-west1-mig
europe-west1

Backend utilization:
Rate: 155.95 RPS

Cloud CDN cache hit: 0.00 RPS (0%)

Name	Zone	Creation time	Recommendation	In use by	Internal IP	External IP	Connect
asia1-vm	asia-east1-b	Sep 2, 2020, 7:20:38 PM			10.40.0.2 (nic0)	35.229.129.46	SSH
e1-vm	us-east1-b	Sep 2, 2020, 7:20:33 PM			10.20.0.2 (nic0)	35.231.18.178	SSH
eu1-vm	europe-west1-d	Sep 2, 2020, 7:20:33 PM			10.30.0.2 (nic0)	104.155.103.172	SSH
europe-west1-mig-0kx5	europe-west1-d	Sep 2, 2020, 9:32:35 PM		europe-west1-mig	0.30.0.8 (nic0)	34.78.50.138	SSH
europe-west1-mig-53rf	europe-west1-c	Sep 2, 2020, 9:32:38 PM		europe-west1-mig	0.30.0.10 (nic0)	34.77.42.82	SSH
europe-west1-mig-wl8p	europe-west1-b	Sep 2, 2020, 9:32:35 PM		europe-west1-mig	0.30.0.9 (nic0)	34.78.195.228	SSH
us-east1-mig-nhc4	us-east1-c	Sep 2, 2020, 11:00:51 PM		us-east1-mig	0.20.0.6 (nic0)	34.74.221.25	SSH
us-east1-mig-xrjw	us-east1-d	Sep 2, 2020, 10:44:40 PM		us-east1-mig	0.20.0.5 (nic0)	35.190.145.45	SSH
us-east1-mig-zdfv	us-east1-c	Sep 2, 2020, 10:44:30 PM		us-east1-mig	0.20.0.4 (nic0)	34.74.117.103	SSH
w1-vm	us-west1-b	Sep 2, 2020, 7:20:23 PM			10.10.0.2 (nic0)	35.233.179.92	SSH
w2-vm	us-west1-b	Sep 2, 2020, 7:20:27 PM			10.11.0.100 (nic0)	35.247.8.163	SSH

us-east1-mig

Members Details Monitoring Errors

Instance templates us-east1-template	Instances by status 5 in total 3 - 2	Location us-east1 3 zones	Instances by health Autohealing needs to be configured to get instances health.	Autohealing Autohealing is not configured.	Autoscaling On LB capacity fraction 80%
---	--	---------------------------------	--	---	---

Filter group members Columns

Name	Creation time	Template	Per instance config	Zone	Health check status	Internal IP	External IP	Connect
us-east1-mig-47h7								
us-east1-mig-lj7								
us-east1-mig-nhc4	Sep 2, 2020, 11:00:51 PM	us-east1-template		us-east1-c		10.20.0.6 (nic0)	34.74.221.25	SSH
us-east1-mig-xrjw	Sep 2, 2020, 10:44:40 PM	us-east1-template		us-east1-d		10.20.0.5 (nic0)	35.190.145.45	SSH
us-east1-mig-zdfv	Sep 2, 2020, 10:44:30 PM	us-east1-template		us-east1-c		10.20.0.4 (nic0)	34.74.117.103	SSH

In my case I had two issues with autoscaling because of quotas. I have only free trial account and I couldn't change quotas such as «Quota 'CPUS_ALL_REGIONS' exceeded. Limit: 12.0 globally» and «Quota 'IN_USE_ADDRESSES' exceeded. Limit: 4.0 in region us-east1». Consequently I saw only three VMs in us-east1 region

Service: Compute Engine API

Name: In-use IP addresses

Quota Metric: compute.googleapis.com/regional_in_use_addresses

Filter table

Location	Current Usage	7 Day Peak Usage	Limit
europe-west1	4	4	4
us-east1	4	4	4

Service: Compute Engine API

Name: CPUs (all regions)

Quota Metric: compute.googleapis.com/cpus_all_regions

Filter table

Location	Current Usage	7 Day Peak Usage	Limit
Global	11	12	12

These exercises are ordered to reflect a common cloud developer experience as follows:

1. Set up your lab environment and learn how to work with your GCP environment.
2. Use of common open source tools to explore your network around the world.
3. Deploy a common use case: use of HTTP Load Balancing and Managed Instance Groups to host a scalable, multi-region web server.
4. Testing and monitoring your network and instances.
5. Cleanup.

Lab Link: [codelabs: Networking 101](#)

TASK 3

The Objectives are to learn:

- Setting up NAT gateways
- How to restrict network traffic that certain tiers of an app cannot talk to each other
- Setting up alternate connectivity options to instances

<input type="checkbox"/>	<input checked="" type="checkbox"/>	nat-gw-eu	eu-west-1-c	Sep 3, 2020, 12:19:29 AM	192.168.20.3 (nic0)	34.78.195.228	SSH	⋮
<input type="checkbox"/>	<input checked="" type="checkbox"/>	nat-gw-us	us-central1-f	Sep 3, 2020, 12:19:48 AM	192.168.10.3 (nic0)	34.122.162.134	SSH	⋮
<input type="checkbox"/>	<input checked="" type="checkbox"/>	nat-node-eu	eu-west-1-c	Sep 3, 2020, 12:22:08 AM	192.168.20.4 (nic0)	None	SSH	⋮
<input type="checkbox"/>	<input checked="" type="checkbox"/>	nat-node-us	us-central1-f	Sep 3, 2020, 12:21:45 AM	192.168.10.4 (nic0)	None	SSH	⋮
<input type="checkbox"/>	<input checked="" type="checkbox"/>	nat-node-w-eu	eu-west-1-c	Sep 3, 2020, 2:19:39 AM	192.168.20.5 (nic0)	None	SSH	⋮
<input type="checkbox"/>	<input checked="" type="checkbox"/>	nat-node-w-us	us-central1-f	Sep 3, 2020, 2:18:36 AM	192.168.10.5 (nic0)	None	SSH	⋮

```
Dzmitry Mezha@NAME-BQNM0AMNSO MINGW64 /c/ter/google-cloud-module (dmezha)
$ gcloud compute addresses list
NAME ADDRESS/RANGE TYPE PURPOSE NETWORK REGION SUBNET STATUS
nat-gw-us-ip 34.122.162.134 EXTERNAL us-central1 IN_USE
web-ext-ip 35.224.100.188 EXTERNAL us-central1 IN_USE
nat-gw-eu-ip 34.78.195.228 EXTERNAL eu-west-1 IN_USE
```

The screenshot shows a web browser window with the address bar displaying '35.224.100.188'. The page content is a small image labeled '128.png'. The browser's developer tools are open, specifically the 'Network' tab, which shows a single request to '35.224.100.188' with a status of '200 OK'. The 'Headers' sub-tab is selected, displaying the following information:

- Request Headers:**
 - Request URL: http://35.224.100.188/
 - Request Method: GET
 - Status Code: 200 OK
 - Remote Address: 35.224.100.188:80
 - Referrer Policy: no-referrer-when-downgrade
- Response Headers:**
 - Accept-Ranges: bytes
 - Connection: Keep-Alive
 - Content-Length: 14
 - Content-Type: text/html
 - Date: Thu, 03 Sep 2020 00:02:57 GMT
 - ETag: "e-5ae5d2c676e67"
 - Keep-Alive: timeout=5, max=100
 - Last-Modified: Wed, 02 Sep 2020 23:41:23 GMT
 - Server: Apache/2.4.25 (Debian)

At the bottom of the network panel, it indicates '2 requests' and '10.7 kB transferred'.

- Map an external service to look like an internal service

<input checked="" type="checkbox"/>	faux-on-prem-svc	us-central1-f	Sep 3, 2020, 3:08:47 AM	10.128.0.2 (nic0)	34.121.131.0	SSH	⋮
<input checked="" type="checkbox"/>	nat-gw-eu	europa-west1-c	Sep 3, 2020, 12:19:29 AM	192.168.20.3 (nic0)	34.78.195.228	SSH	⋮
<input checked="" type="checkbox"/>	nat-gw-us	us-central1-f	Sep 3, 2020, 12:19:48 AM	192.168.10.3 (nic0)	34.122.162.134	SSH	⋮
<input checked="" type="checkbox"/>	nat-node-eu	europa-west1-c	Sep 3, 2020, 12:22:08 AM	192.168.20.4 (nic0)	None	SSH	⋮
<input checked="" type="checkbox"/>	nat-node-us	us-central1-f	Sep 3, 2020, 12:21:45 AM	192.168.10.4 (nic0)	None	SSH	⋮
<input checked="" type="checkbox"/>	nat-node-w-eu	europa-west1-c	Sep 3, 2020, 2:19:39 AM	192.168.20.5 (nic0)	None	SSH	⋮
<input checked="" type="checkbox"/>	nat-node-w-us	us-central1-f	Sep 3, 2020, 2:18:36 AM	192.168.10.5 (nic0)	None	SSH	⋮

```

dzmitry_mezhva_gmail_com@nat-node-us:~$ curl -Is nat-gw-us
HTTP/1.1 200 OK
Date: Thu, 03 Sep 2020 00:25:55 GMT
Server: Apache/2.4.25 (Debian)
Last-Modified: Thu, 03 Sep 2020 00:10:29 GMT
ETag: "29cd-5ae5d946f6c49"
Accept-Ranges: bytes
Content-Length: 10701
Vary: Accept-Encoding
Content-Type: text/html

```

- How to setup an Egress proxy limiting access to specific resources

```

[dzmitry_mezhva_gmail_com@nat-node-gcp-eu ~]$ curl -I www.google.com
HTTP/1.1 403 Forbidden
Server: squid/3.5.20
Mime-Version: 1.0
Date: Thu, 03 Sep 2020 01:00:51 GMT
Content-Type: text/html; charset=utf-8
Content-Length: 3522
X-Squid-Error: ERR_ACCESS_DENIED 0
Vary: Accept-Language
Content-Language: en
X-Cache: MISS from nat-gw-eu
X-Cache-Lookup: NONE from nat-gw-eu:3128
Via: 1.1 nat-gw-eu (squid/3.5.20)
Connection: keep-alive

```

```

[dzmitry_mezhva_gmail_com@nat-node-gcp-eu ~]$ curl -I https://www.google.com
HTTP/1.1 403 Forbidden
Server: squid/3.5.20
Mime-Version: 1.0
Date: Thu, 03 Sep 2020 01:01:52 GMT
Content-Type: text/html; charset=utf-8
Content-Length: 3512
X-Squid-Error: ERR_ACCESS_DENIED 0
Vary: Accept-Language
Content-Language: en
X-Cache: MISS from nat-gw-eu

```

```
[dzmitry_mezhva_gmail_com@nat-node-gcp-eu ~]$ curl -I www.iana.org
HTTP/1.1 403 Forbidden
Server: squid/3.5.20
Mime-Version: 1.0
Date: Thu, 03 Sep 2020 01:02:06 GMT
Content-Type: text/html; charset=utf-8
Content-Length: 3516
X-Squid-Error: ERR_ACCESS_DENIED 0
Vary: Accept-Language
Content-Language: en
X-Cache: MISS from nat-gw-eu
X-Cache-Lookup: NONE from nat-gw-eu:3128
Via: 1.1 nat-gw-eu (squid/3.5.20)
Connection: keep-alive
```

```
[dzmitry_mezhva_gmail_com@nat-node-gcp-eu ~]$ curl -I 34.121.131.0
HTTP/1.1 200 OK
Date: Thu, 03 Sep 2020 01:14:20 GMT
Server: Apache/2.4.25 (Debian)
Last-Modified: Thu, 03 Sep 2020 00:10:29 GMT
ETag: "29cd-5ae5d946f6c49"
Accept-Ranges: bytes
Content-Length: 10701
Vary: Accept-Encoding
Content-Type: text/html
X-Cache: MISS from nat-gw-eu
X-Cache-Lookup: MISS from nat-gw-eu:3128
Via: 1.1 nat-gw-eu (squid/3.5.20)
Connection: keep-alive
```

```
[dzmitry_mezhva_gmail_com@nat-node-gcp-eu ~]$ gsutil ls gs://
gs://nw102-mezhva-bucket/
```

```
[dzmitry_mezhva_gmail_com@nat-node-gcp-eu ~]$ gcloud compute instances list
ERROR: gcloud crashed (HTTPError): (403, 'Forbidden')

If you would like to report this issue, please run the following command:
  gcloud feedback

To check gcloud for common problems, please run the following command:
  gcloud info --run-diagnostics
```

```
Last login: Thu Sep  3 01:14:13 2020 from nat-gw-eu.europe-west1-c.c.devopslab2020-task2.internal
[dzmitry_mezhva_gmail_com@nat-node-gcp-eu ~]$ gcloud compute instances list
```

NAME	ZONE	MACHINE_TYPE	PREEMPTIBLE	INTERNAL_IP	EXTERNAL_IP	STATUS
nat-gw-eu	europe-west1-c	n1-standard-1		192.168.20.3	34.78.195.228	RUNNING
nat-node-eu	europe-west1-c	n1-standard-1		192.168.20.4		RUNNING
nat-node-gcp-eu	europe-west1-c	n1-standard-1		192.168.20.6		RUNNING
nat-node-w-eu	europe-west1-c	n1-standard-1		192.168.20.5		RUNNING
faux-on-prem-svc	us-central1-f	n1-standard-1		10.128.0.2	34.121.131.0	RUNNING
nat-gw-us	us-central1-f	n1-standard-1		192.168.10.3	34.122.162.134	RUNNING
nat-node-us	us-central1-f	n1-standard-1		192.168.10.4		RUNNING
nat-node-w-us	us-central1-f	n1-standard-1		192.168.10.5		RUNNING

Lab Link: [codelabs: Networking 102](#)

TASK 4

The Objectives are to learn:

- Secure app in custom network

Lab Link: [codelabs: custom_network](#)

Google Cloud Platform devopslab2020-task4

Search products and resources

VM instances

CREATE INSTANCE IMPORT VM REFRESH START / RESUME STOP

Filter VM instances Columns

Name	Zone	Recommendation	In use by	Internal IP	External IP	Connect
private-vm	europe-north1-a			192.168.1.2 (nic0)	35.228.244.60	SSH
public-vm	europe-north1-a			192.168.0.2 (nic0)	35.228.131.83	SSH

```
Dmitry_Mezhva@NAME-BQNM0AMNSO MINGW64 /c/ter/google-cloud-module (dmezhva)
$ ping 35.228.131.83
```

```
Pinging 35.228.131.83 with 32 bytes of data:
Reply from 35.228.131.83: bytes=32 time=47ms TTL=56
Reply from 35.228.131.83: bytes=32 time=46ms TTL=56
Reply from 35.228.131.83: bytes=32 time=46ms TTL=56
Reply from 35.228.131.83: bytes=32 time=46ms TTL=56

Ping statistics for 35.228.131.83:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 46ms, Maximum = 47ms, Average = 46ms
```

```
Dmitry_Mezhva@NAME-BQNM0AMNSO MINGW64 /c/ter/google-cloud-module (dmezhva)
$ ping 35.228.244.60
```

```
Pinging 35.228.244.60 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 35.228.244.60:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
Dmitry_Mezhva@private-vm:~$ ping -c 4 public-vm
PING public-vm.europe-north1-a.c.devopslab2020-task4.internal (192.168.0.2) 56(84) bytes of data:
64 bytes from public-vm.europe-north1-a.c.devopslab2020-task4.internal (192.168.0.2): icmp_seq=1 ttl=64 time=0.201 ms
64 bytes from public-vm.europe-north1-a.c.devopslab2020-task4.internal (192.168.0.2): icmp_seq=2 ttl=64 time=0.191 ms
64 bytes from public-vm.europe-north1-a.c.devopslab2020-task4.internal (192.168.0.2): icmp_seq=3 ttl=64 time=0.189 ms
64 bytes from public-vm.europe-north1-a.c.devopslab2020-task4.internal (192.168.0.2): icmp_seq=4 ttl=64 time=0.203 ms

--- public-vm.europe-north1-a.c.devopslab2020-task4.internal ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3076ms
rtt min/avg/max/mdev = 0.189/0.196/0.203/0.006 ms
Dmitry_Mezhva@public-vm:~$ ping -c 4 private-vm
PING private-vm.europe-north1-a.c.devopslab2020-task4.internal (192.168.1.2) 56(84) bytes of data:
64 bytes from private-vm.europe-north1-a.c.devopslab2020-task4.internal (192.168.1.2): icmp_seq=1 ttl=64 time=1.45 ms
64 bytes from private-vm.europe-north1-a.c.devopslab2020-task4.internal (192.168.1.2): icmp_seq=2 ttl=64 time=0.271 ms
64 bytes from private-vm.europe-north1-a.c.devopslab2020-task4.internal (192.168.1.2): icmp_seq=3 ttl=64 time=0.279 ms
64 bytes from private-vm.europe-north1-a.c.devopslab2020-task4.internal (192.168.1.2): icmp_seq=4 ttl=64 time=0.220 ms

--- private-vm.europe-north1-a.c.devopslab2020-task4.internal ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3054ms
rtt min/avg/max/mdev = 0.220/0.556/1.454/0.518 ms
```

TASK 5

Create network configuration via terraform.

Resources should be used:

- 1) **google_compute_network** (to create network)
https://www.terraform.io/docs/providers/google/r/compute_network.html
 Network name: \${student_name}-vpc
- 2) **google_compute_firewall**
 (to create rules for external (allow 80,22) /internal access (allow 0-65535))
https://www.terraform.io/docs/providers/google/r/compute_firewall.html
- 3) **google_compute_subnetwork**
https://www.terraform.io/docs/providers/google/r/compute_subnetwork.html

ranges:

- Public range: 10."\${student_IDnum}"1.0/24
- Private range: 10."\${student_IDnum}"2.0/24

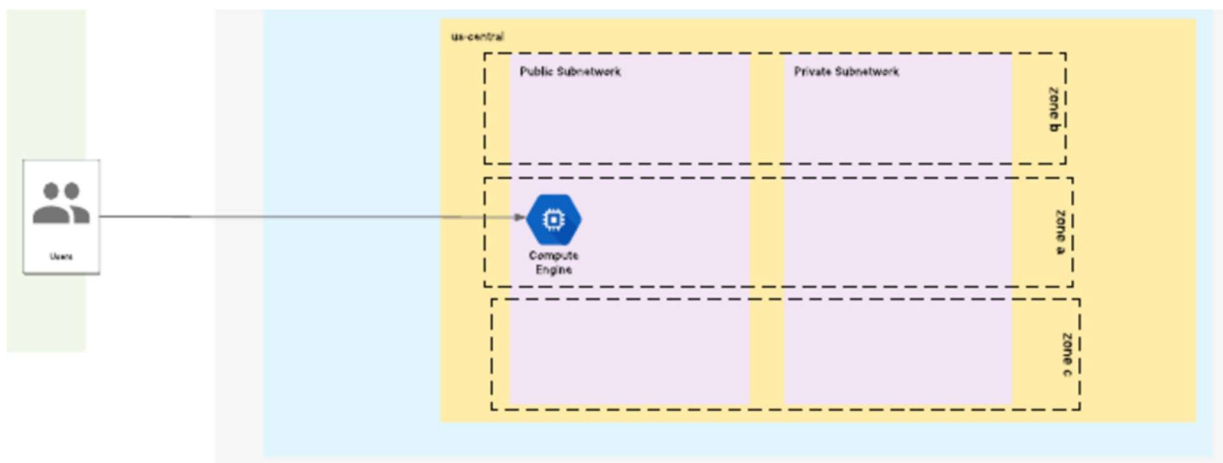
4) google_compute_instance

https://www.terraform.io/docs/providers/google/r/compute_instance.html

1. nginx with default page "Hello from \${student_name}"

All resources should contain description (where it's possible)

Network topology.



```
Dzmitry Mezhva@NAME-BQNMOAMNSO MINGW64 /c/ter/google-cloud-module/Day3 (dmezhva)
$ curl -is 34.122.161.36
HTTP/1.1 200 OK
Server: nginx/1.16.1
Date: Thu, 03 Sep 2020 04:55:57 GMT
Content-Type: text/html
Content-Length: 19
Last-Modified: Thu, 03 Sep 2020 04:47:42 GMT
Connection: keep-alive
ETag: "5f50756e-13"
Accept-Ranges: bytes
hello from dmezhva

Dzmitry Mezhva@NAME-BQNMOAMNSO MINGW64 /c/ter/google-cloud-module/Day3 (dmezhva)
$ ping 34.122.161.36
Pinging 34.122.161.36 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 34.122.161.36:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

All reports/code please place into repository:

<https://github.com/MNT-Lab/google-cloud-module> into appropriate branches: *first char of name + surname*.

For example:

Student: Siarhei Ivanou

Branch Name: **sivanou**

Format depends on case: README.md/scripts/terraform files

Email pattern: [MNT-CD-8.3]-FirstName-LastName

Email should contain the link to personalized branch.