Title: Assignment 2, Cloud Computing

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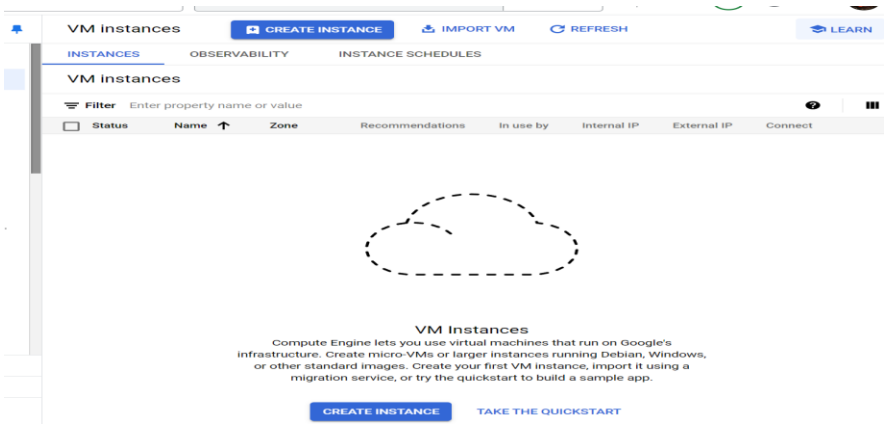
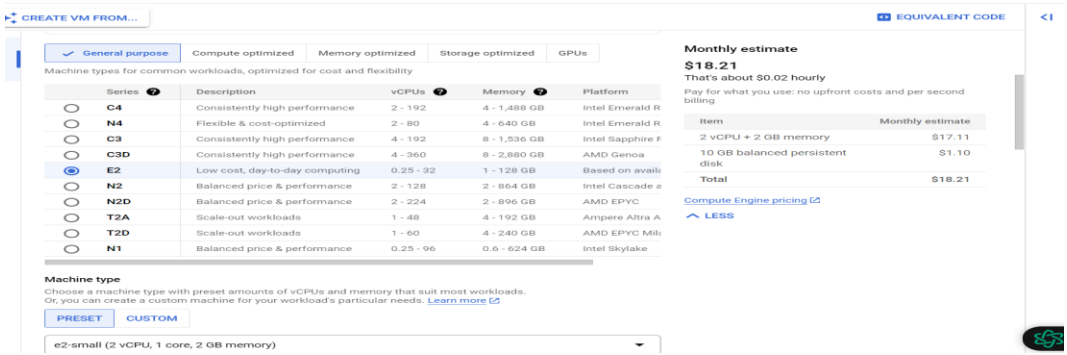
DATE: 17.10.2024

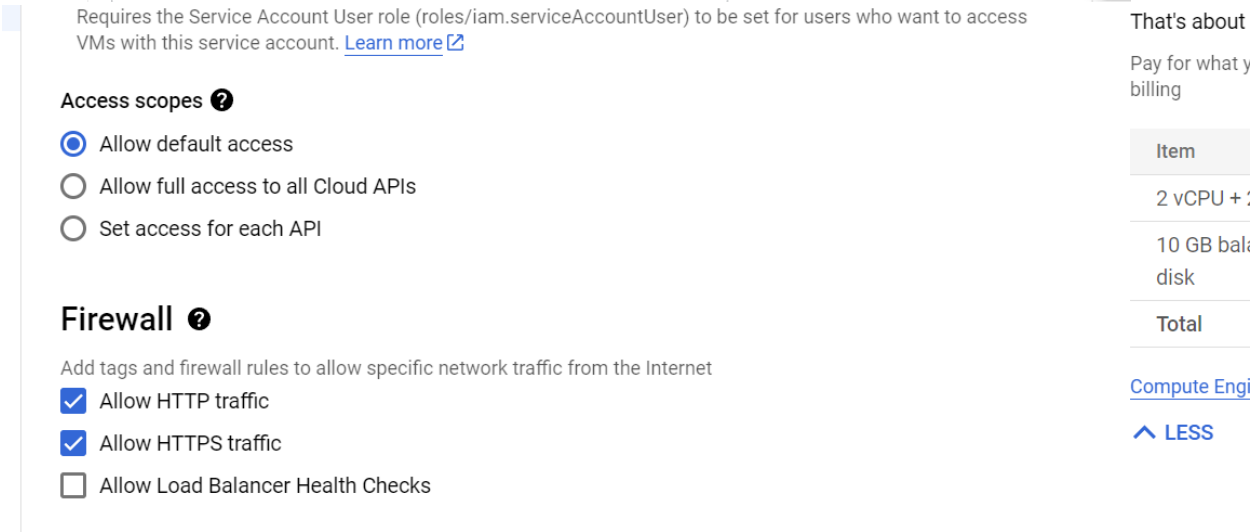
Contents

1. Virtual Machines in Google Cloud

- Use the Google Cloud Console to create a VM instance.
- Select an appropriate machine type, operating system, and region.
- Configure the firewall to allow SSH traffic.

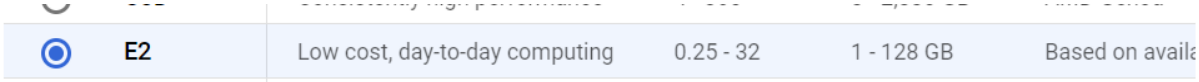




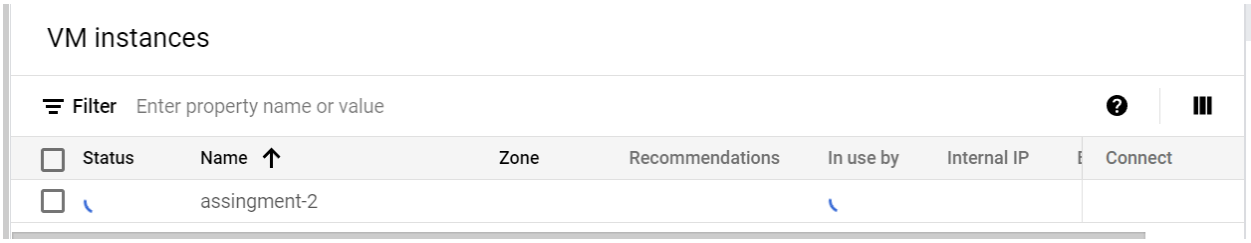


- Write a brief explanation of the choices made during setup.

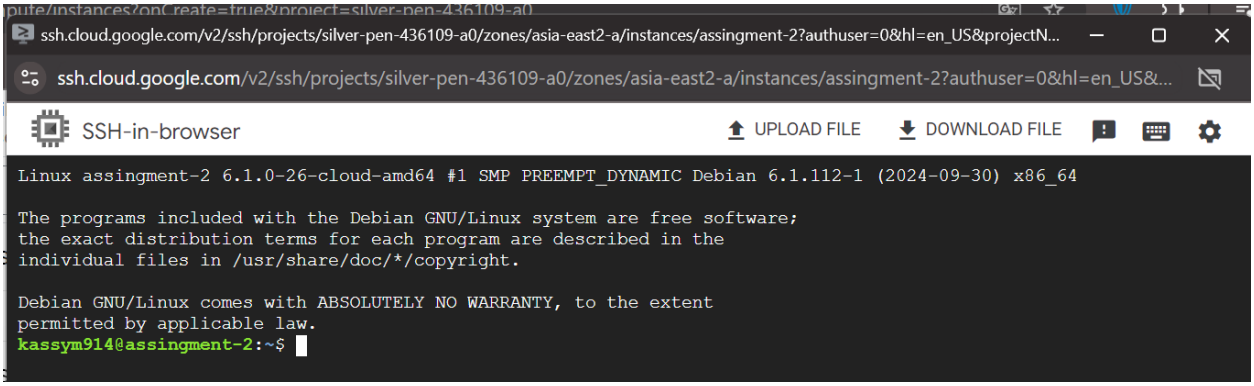
Have chosen basic configurations to keep low cost. For region chose asia-east2(Hong Kong) and zone asia-east2-a, probably as closest to my current location.



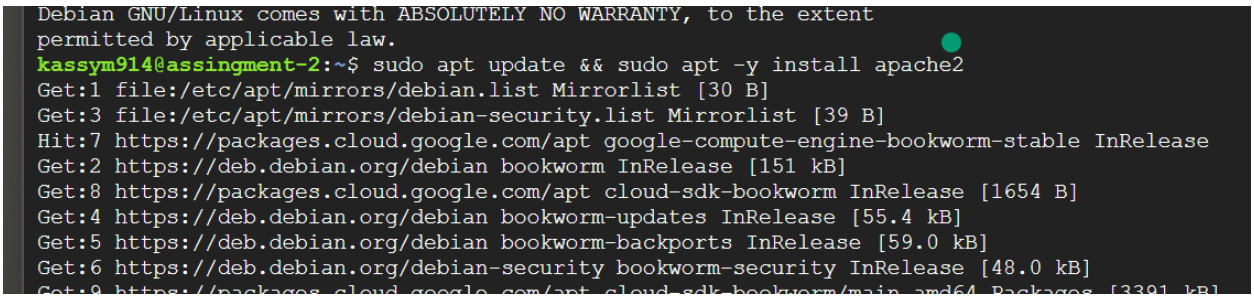
With configurations for basic purpose.



- Use the SSH option from the Cloud Console to connect to your VM.



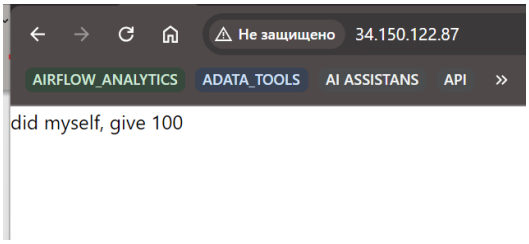
- Install a web server (e.g., Apache or Nginx) on the VM.



```
kassym914@assingment-2:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/lib/systemd/system/apache2.service; enabled; preset: enabled)
     Active: active (running) since Thu 2024-10-17 09:19:02 UTC; 1min 35s ago
       Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 1877 (apache2)
      Tasks: 55 (limit: 2344)
```

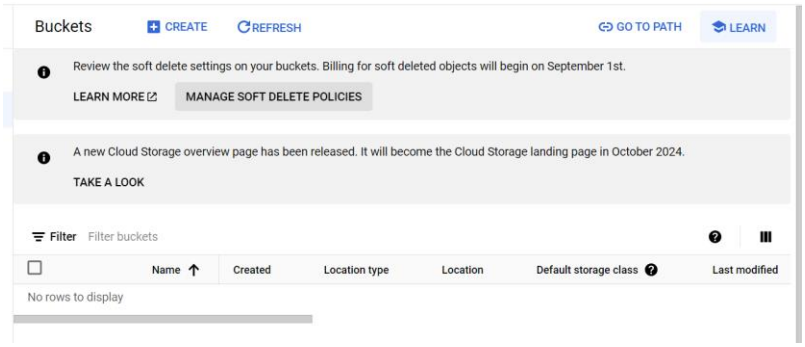
- Create a simple HTML page to serve as a test.

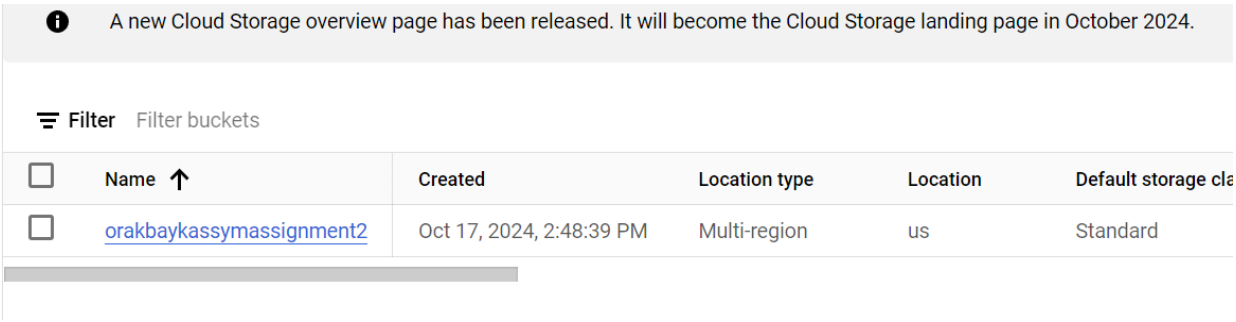
```
kassym914@assingment-2:/$ sudo su
root@assingment-2:/# cd /var/www/html
root@assingment-2:/var/www/html# ls
index.html
root@assingment-2:/var/www/html# echo "did myself, give 100" > index.htmml
root@assingment-2:/var/www/html# echo "did myself, give 100" > index.html
root@assingment-2:/var/www/html#
```



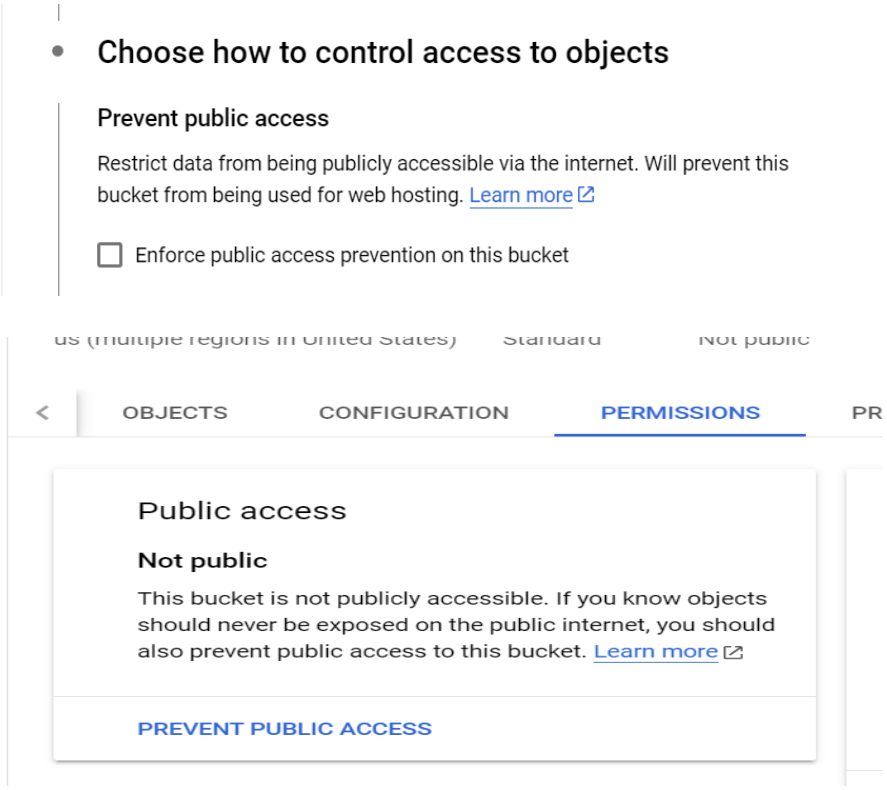
2. Storage Solutions in Google Cloud

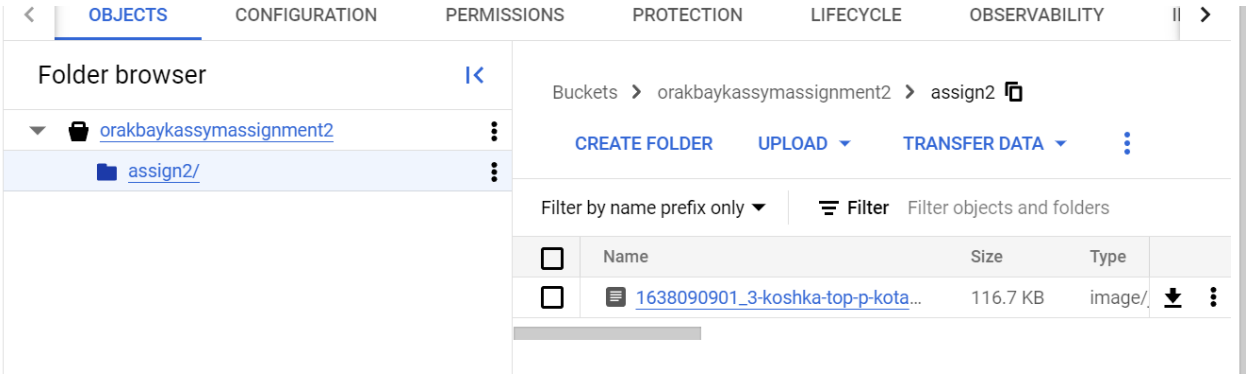
- **Create a Cloud Storage Bucket**
  - Use the Google Cloud Console to create a Cloud Storage bucket.





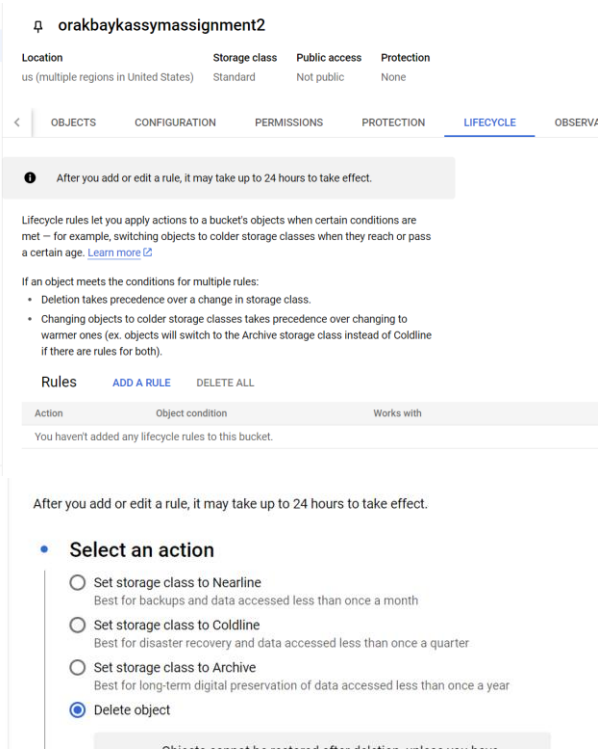
- Set the bucket's access controls (public/private).
- Upload a sample file (e.g., image or document) to the bucket.

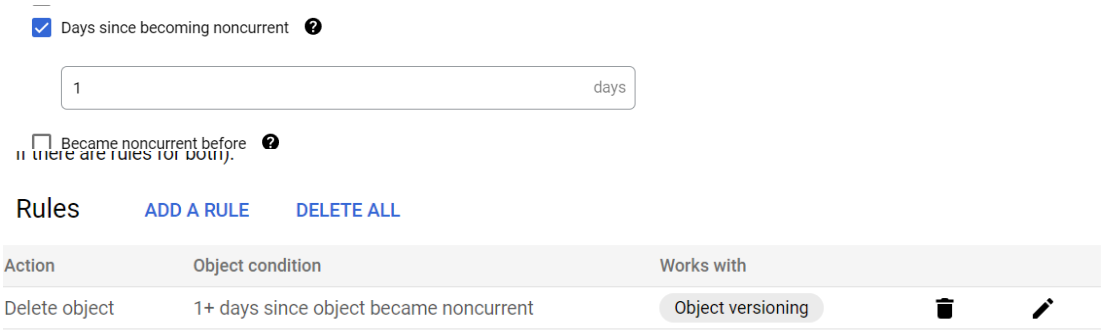




Implement Object Lifecycle Management

- Set up a lifecycle rule for your bucket to automatically delete objects after a certain period (e.g., 30 days).



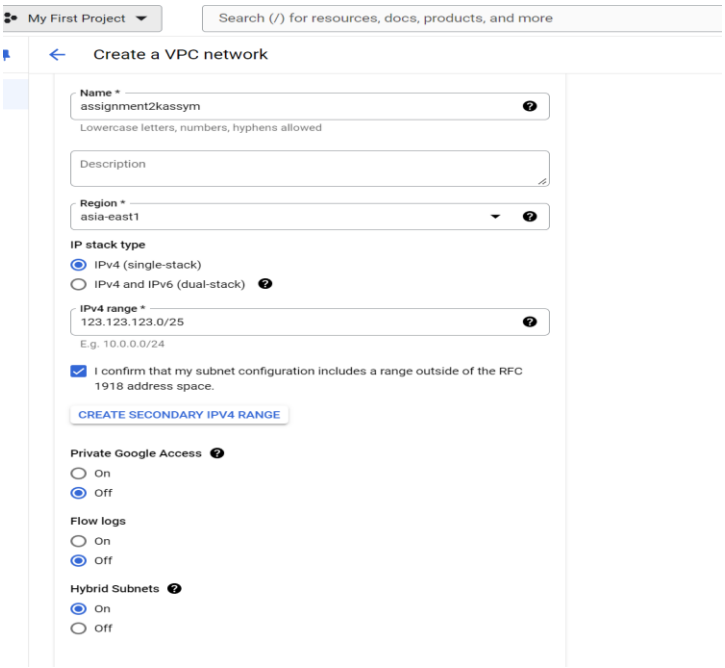


Explain the use cases for Cloud Storage and the benefits of lifecycle management.

There are a lot of use cases for cloud storage, it makes possible to access data from different devices and applications and it is applicable for backups. Lifecycle management allows to set rules that can minimize memory usage.

3. Networking in Google Cloud

- **Set Up a Virtual Private Cloud (VPC)**
  - Create a new VPC network with subnets.
  - Configure firewall rules to allow traffic between your VM and the internet.



IPV4 FIREWALL RULES

Name	Type	Targets	Filters	Protocols / ports	Action	Priority	
assignment2kassymvpc-allow-custom	Ingress	Apply to all	IP ranges:	all	Allow	65,534	EDIT
assignment2kassymvpc-allow-icmp	Ingress	Apply to all	IP ranges: 0.0.0.0/0	icmp	Allow	65,534	
assignment2kassymvpc-allow-rdp	Ingress	Apply to all	IP ranges: 0.0.0.0/0	tcp:3389	Allow	65,534	
assignment2kassymvpc-allow-ssh	Ingress	Apply to all	IP ranges: 0.0.0.0/0	tcp:22	Allow	65,534	
assignment2kassymvpc-deny-all-ingress	Ingress	Apply to all	IP ranges:	all	Deny	65,535	

SMTP port 25 disallowed in this project. Learn more

VPC networks

Filter Enter property name or value

Name	Subnets	MTU	Mode	IPv6 ULA range	Gateways	Firewall rules
assignment2kassymvpc	1	1460	Custom			4

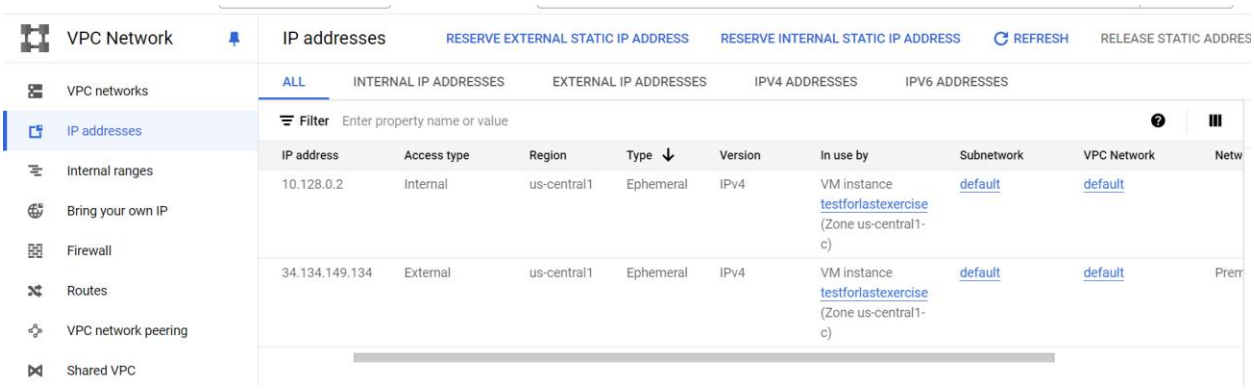
Recreated VM, because deleted first one

INSTANCES OBSERVABILITY INSTANCE SCHEDULES

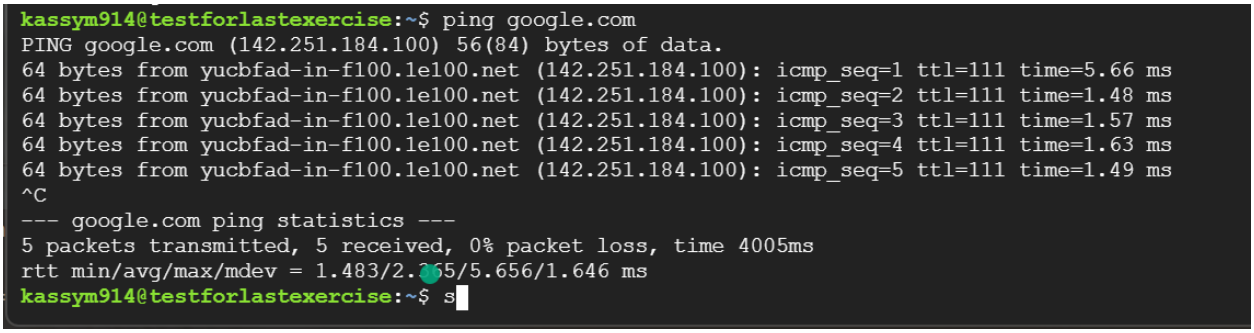
VM instances

Filter Enter property name or value

Status	Name	Zone	Recommendations	In use by	Internal IP
✓	testforlastexercise	us-central1-c			10.128.0.2 (nic0)



- Use the VM to ping an external server to verify connectivity.



- Discuss the importance of VPCs and firewall rules in cloud networking.

VPC provides networking functionality to VM instances, k8s clusters and serverless workloads and makes globally accessible and firewall rules guarantees the security.

References

- https://cloud.google.com/compute/docs/instances?_gl=1*1a0z2dc*_ga*MTcxMzI2MzQxMS4xNzI2NzM3NTI1*_ga_WH2QY8WWF5*MTcyOTE1NTU4Mi40LjEuMTcyOTE2MTk1Mi4zOC4wLjA.
- https://cloud.google.com/vpc/docs/overview
- https://cloud.google.com/storage/docs