GCP TASK

Google Cloud Platform

Google Cloud Platform (GCP), offered by Google, is a suite of cloud computing services that runs on the same infrastructure that Google uses internally for its end-user products, such as Google Search.

Google Cloud Platform is a provider of **computing** resources for deploying and operating applications on the web. Its specialty is providing a place for individuals and enterprises to build and run software, and it **uses** the web to connect to the users of that software.

Task Description :-

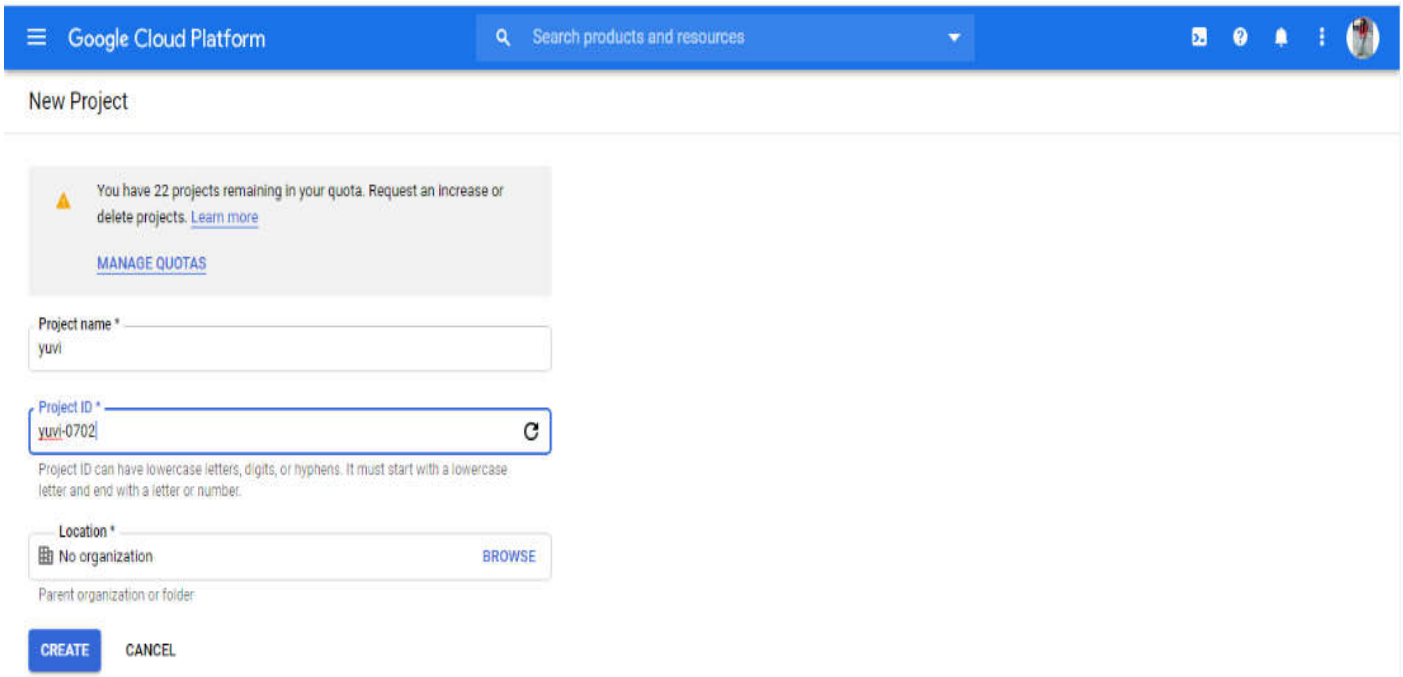
- ✓ Create Two projects
- ✓ Enable API's
- ✓ Create VPC in both the projects in different – different regions
- ✓ Create subnets in both the VPC
- ✓ Do VPC peering for the connection
- ✓ Create Google Kubernetes Engine (GKE) in one VPC and launch cluster
- ✓ Launch Wordpress on the top of that Kubernetes cluster
- ✓ Create deployment which automatically will create a LoadBalancer for any disaster recovery
- ✓ Launch SQL server in other VPC with MYSQL database
- ✓ Then finally install wordpress in one VPC using running database in other PC

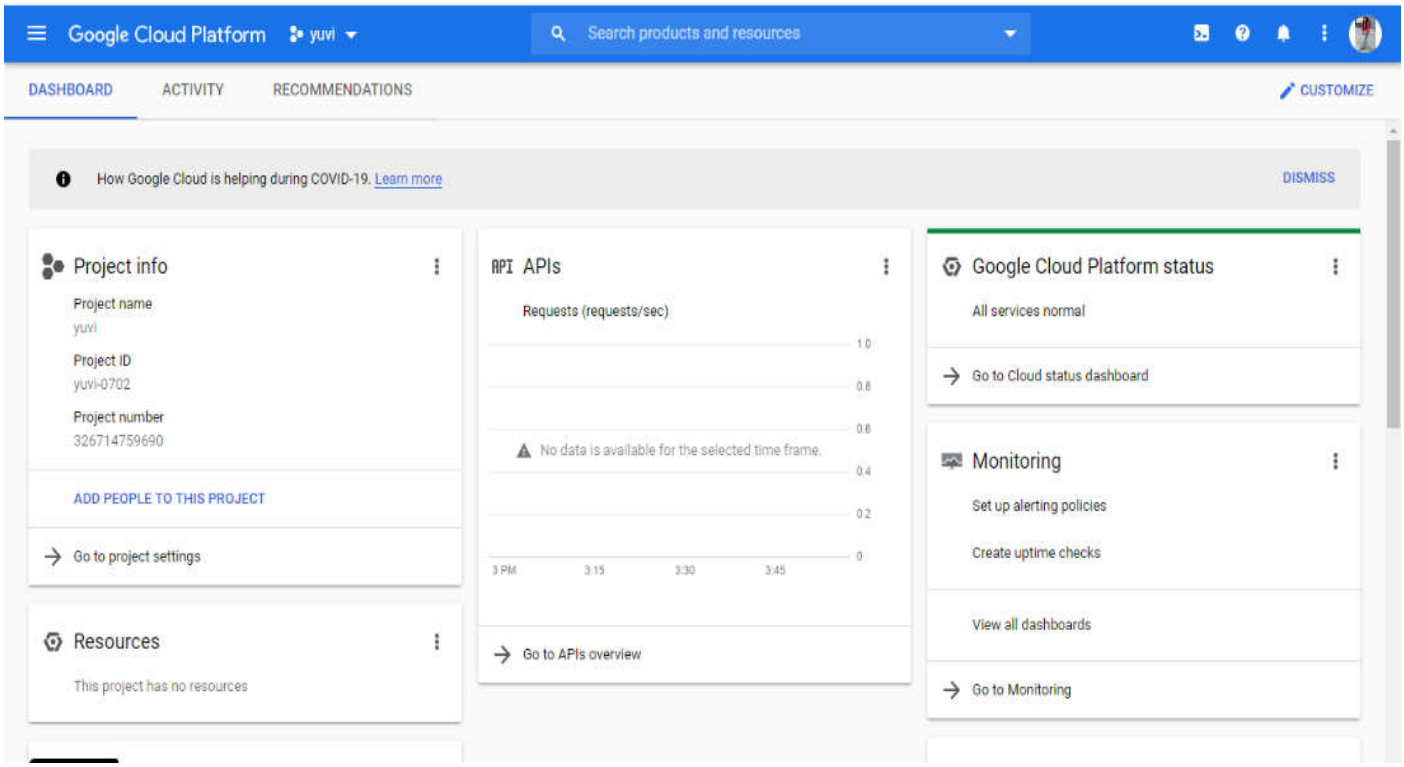
I also have done something extra here :-

- ✓ I Launched one VM here and hosted a webserver on that VM

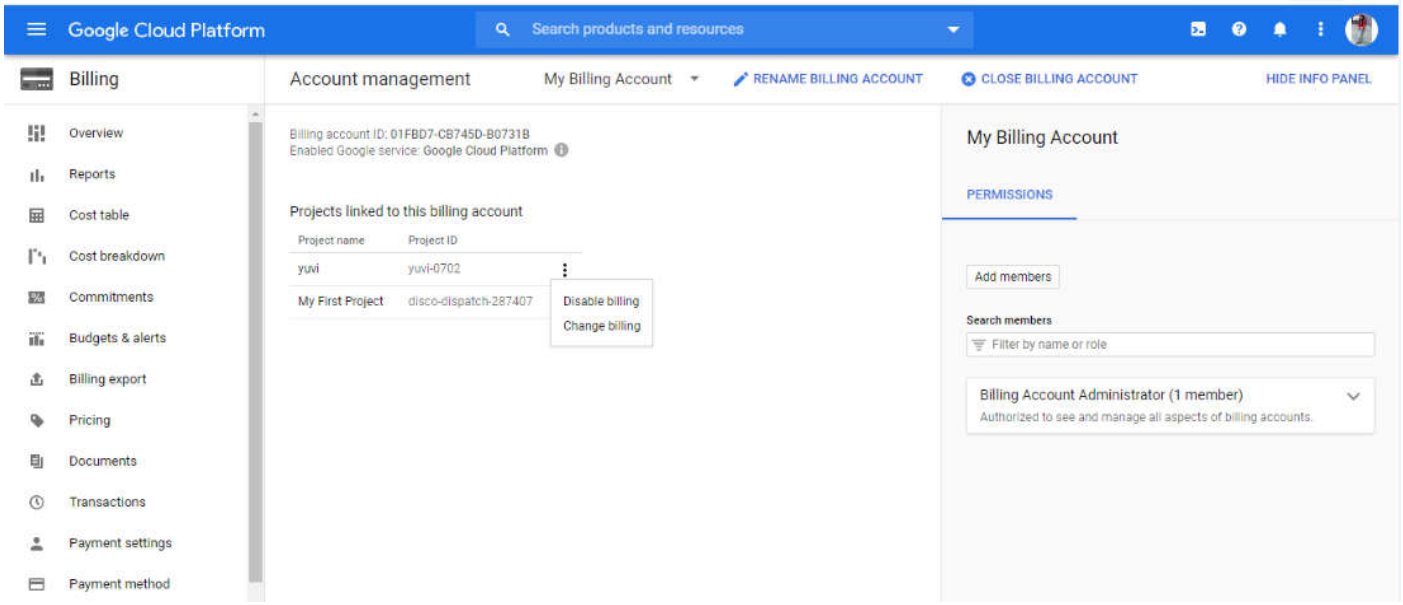
Project Creation :-

A **project** organizes all your Google Cloud resources. A **project** consists of a set of users; a set of APIs; and billing, authentication, and monitoring settings for those APIs.





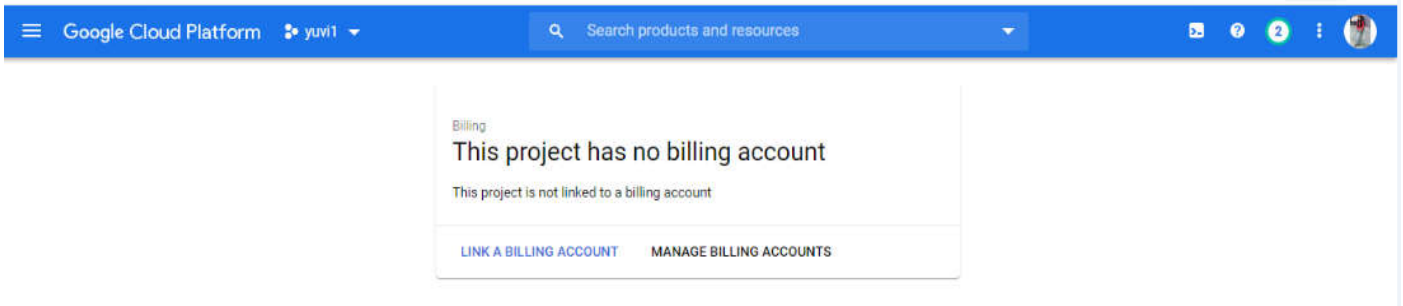
Enable Billing :-

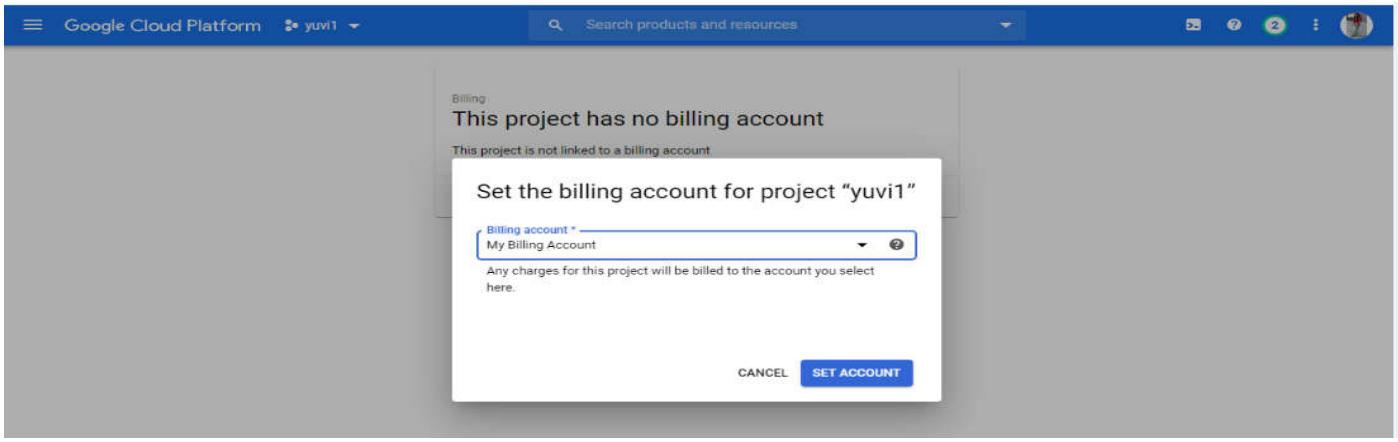


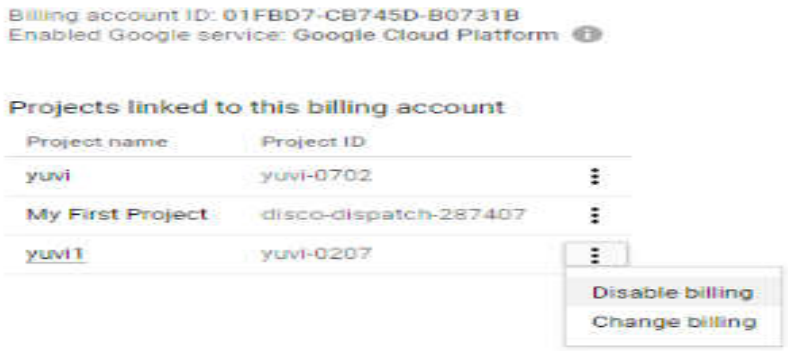
I have created another project using CLI :-

```
preetishishodia702@cloudshell:~$ gcloud projects create yuvi-0207 --name=yuvi1
Create in progress for [https://cloudresourcemanager.googleapis.com/v1/projects/yuvi-0207].
Waiting for [operations/cp.9166606076529872767] to finish...done.
Enabling service [cloudapis.googleapis.com] on project [yuvi-0207]...
Operation "operations/acf.e002f132-1fa3-41e7-9565-83073732bba3" finished successfully.
preetishishodia702@cloudshell:~$ gcloud projects list
PROJECT_ID            NAME              PROJECT_NUMBER
disco-dispatch-287407  My First Project  737278956129
windy-fortress-287206  My First Project  594834881036
yuvi-0207             yuvi1             759643201661
yuvi-0702             yuvi              326714759690
preetishishodia702@cloudshell:~$
```

Set billing for this project also :-



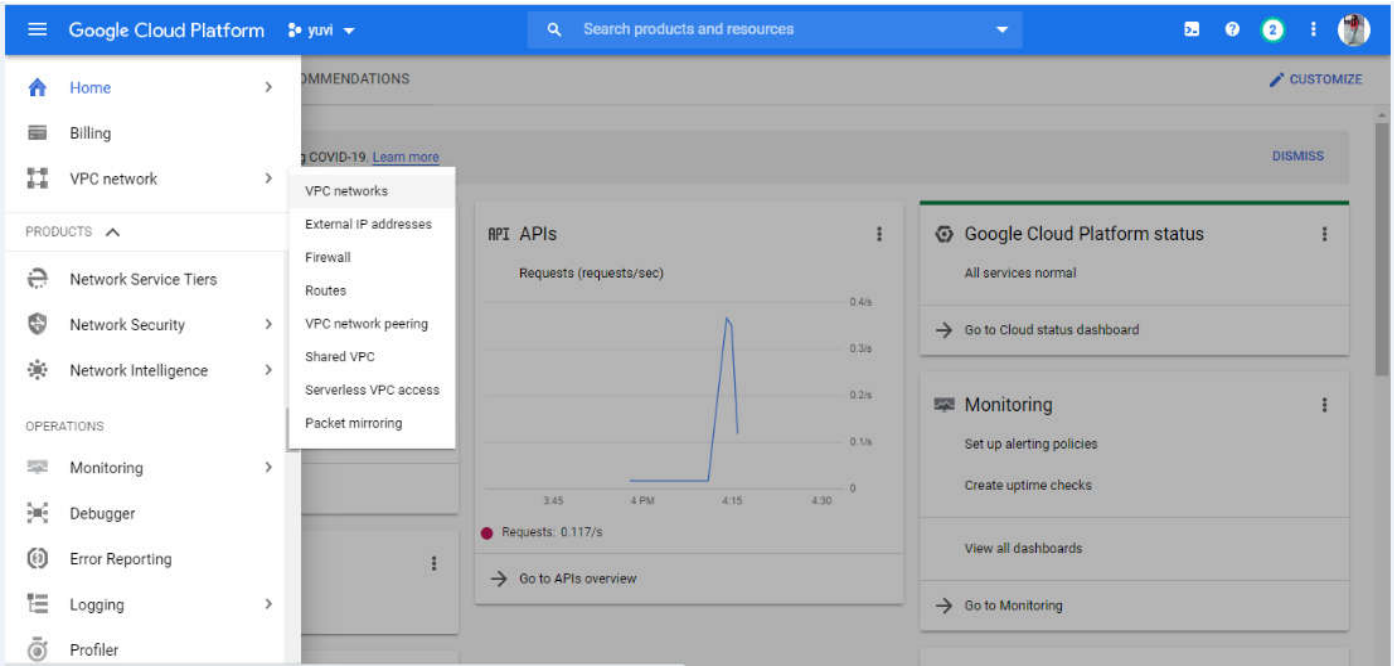


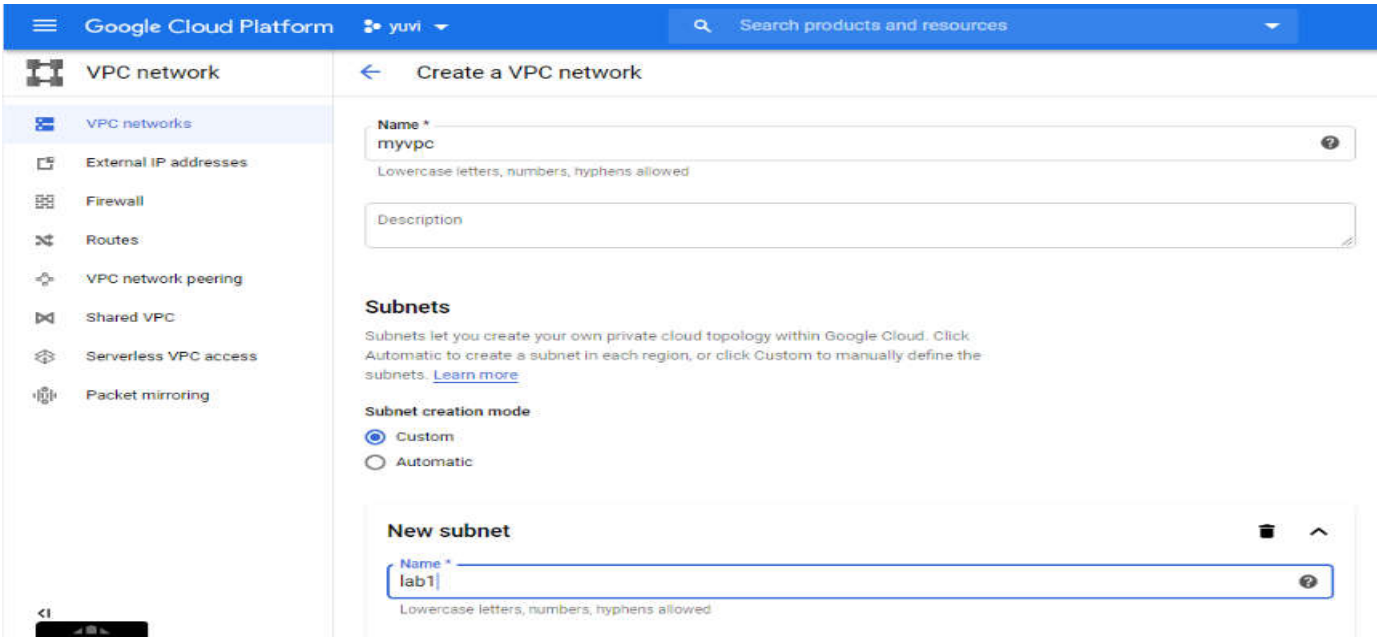


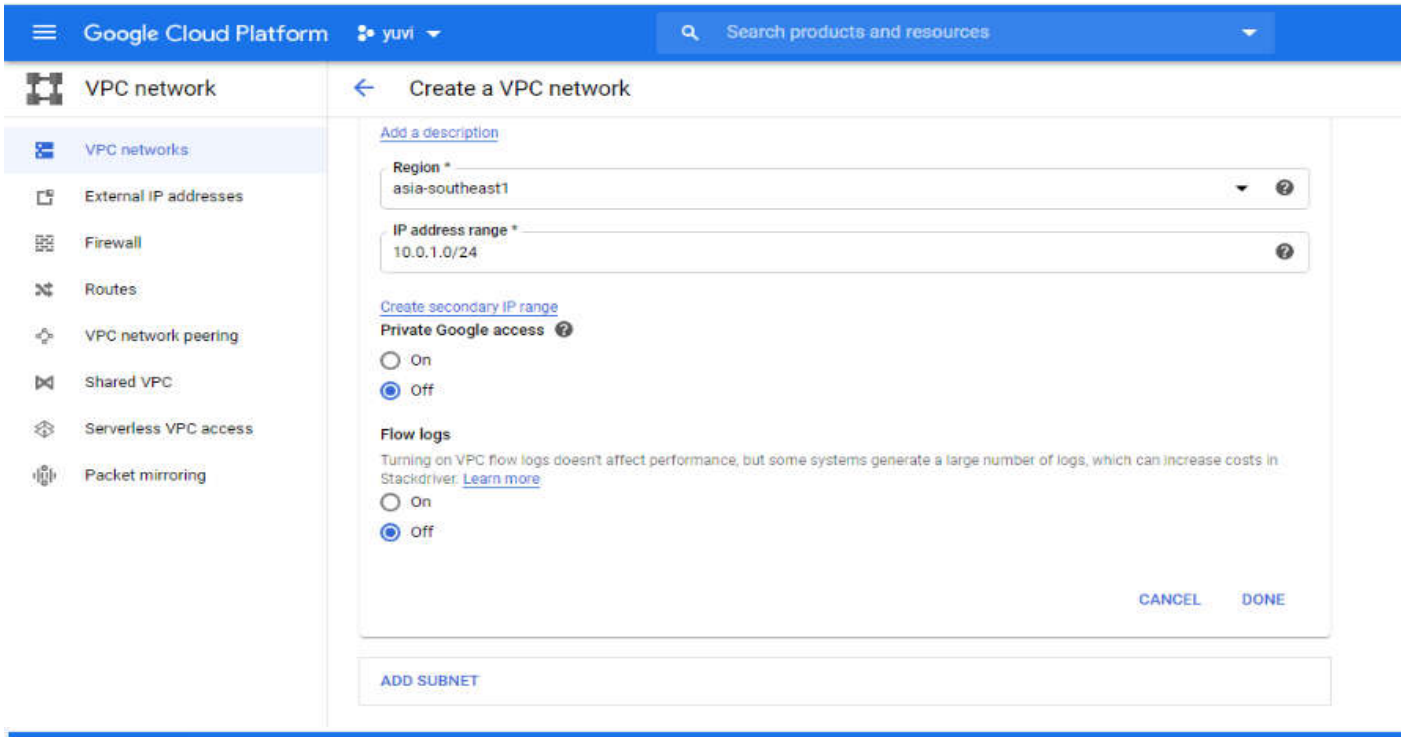
VPC Creation :-

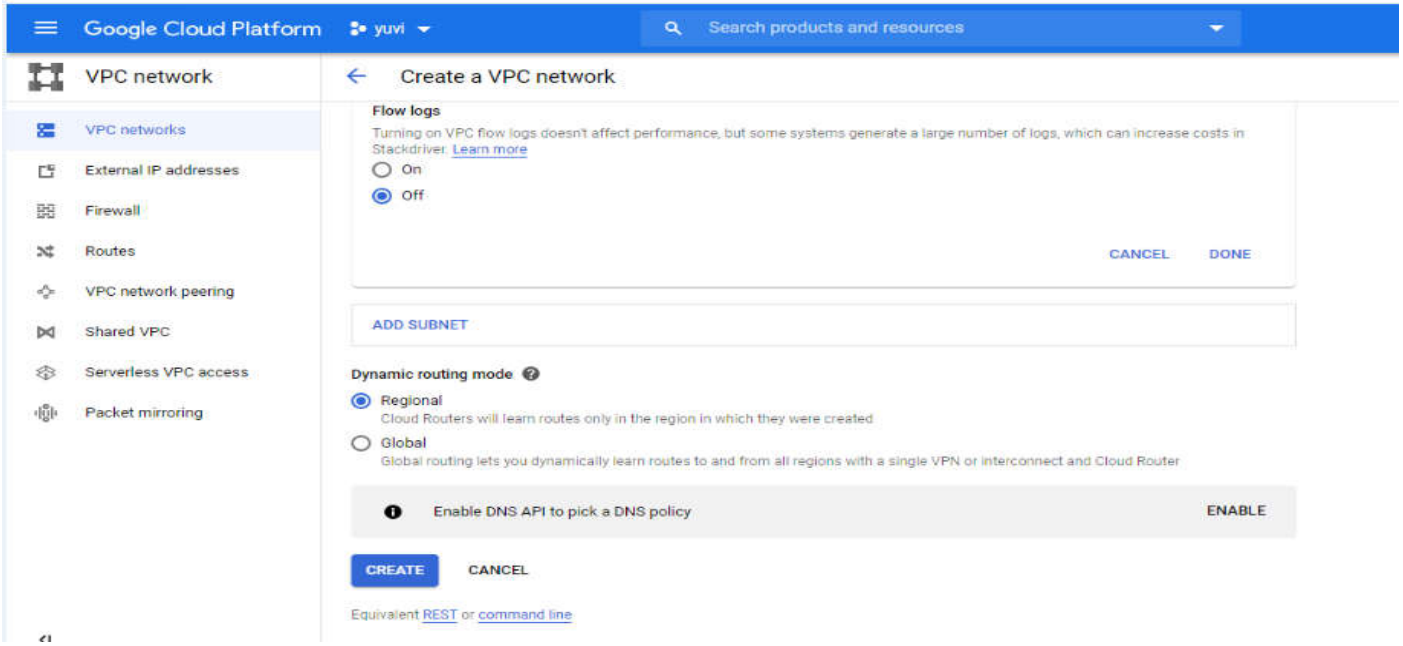
Virtual Private Cloud (VPC) provides networking functionality to Compute Engine virtual machine (VM) instances, Google Kubernetes Engine (GKE) clusters, and the App Engine flexible environment. VPC provides networking for your cloud-based resources and services

VPC Creation in one project :-

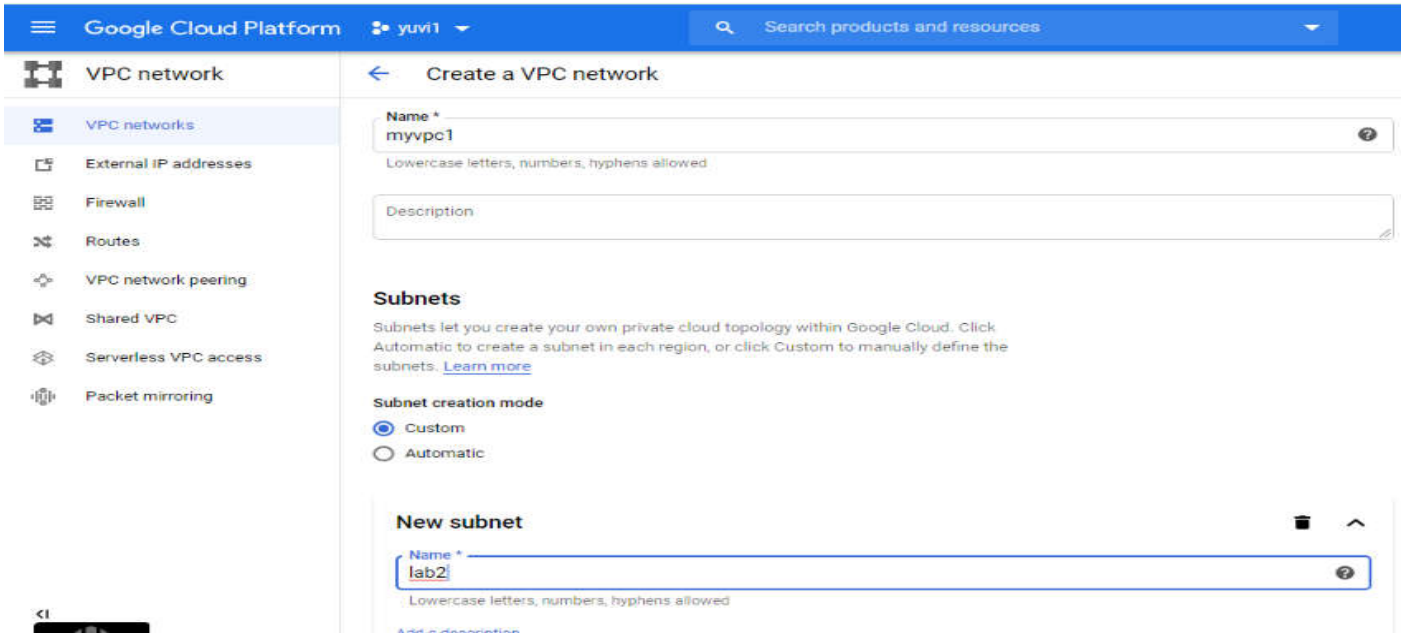


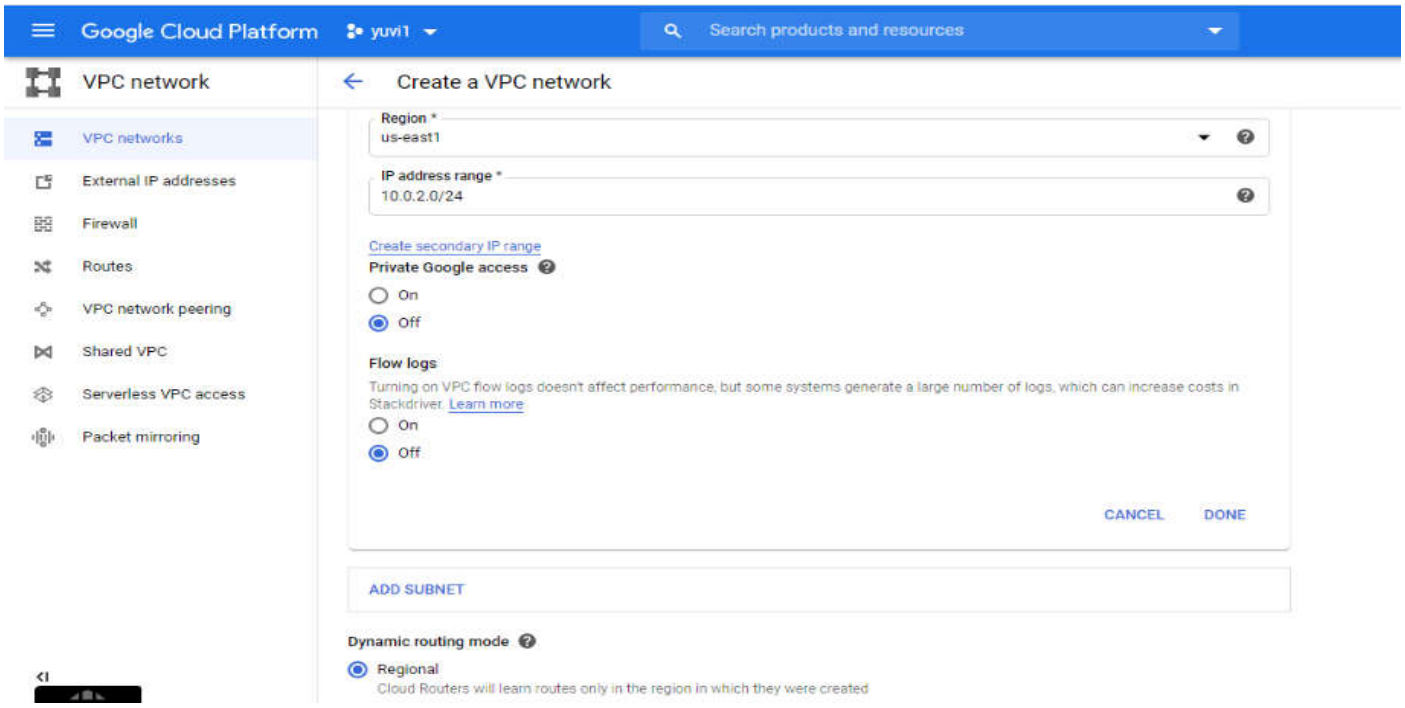

Google Cloud Platform
yuvi
Search products and resources
VPC network
Create a VPC network
VPC networks
External IP addresses
Firewall
Routes
VPC network peering
Shared VPC
Serverless VPC access
Packet mirroring
Name *
myvpc
Lowercase letters, numbers, hyphens allowed
Description
Subnets
Subnets let you create your own private cloud topology within Google Cloud. Click Automatic to create a subnet in each region, or click Custom to manually define the subnets. Learn more
Subnet creation mode
Custom
Automatic
New subnet
Name *
lab1
Lowercase letters, numbers, hyphens allowed

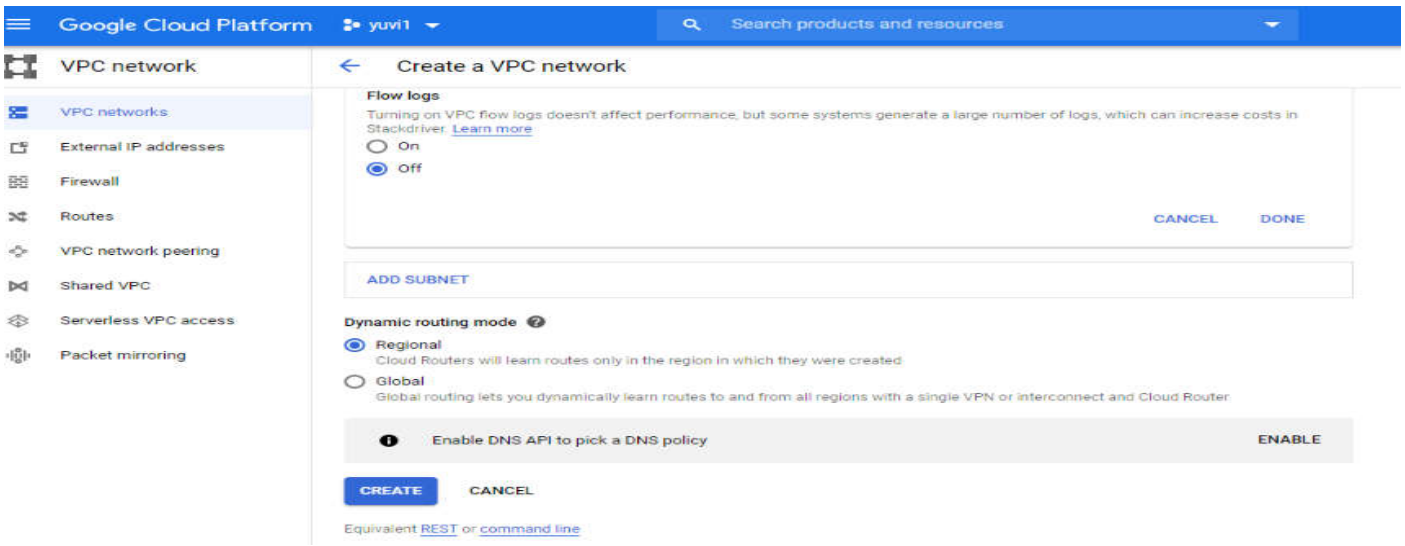

Google Cloud Platform
yuvi
Search products and resources
VPC network
Create a VPC network
VPC networks
External IP addresses
Firewall
Routes
VPC network peering
Shared VPC
Serverless VPC access
Packet mirroring
Add a description
Region *
asia-southeast1
IP address range *
10.0.1.0/24
Create secondary IP range
Private Google access
On
Off
Flow logs
Turning on VPC flow logs doesn't affect performance, but some systems generate a large number of logs, which can increase costs in Stackdriver. Learn more
On
Off
CANCEL
DONE
ADD SUBNET


Google Cloud Platform
yuvi
Search products and resources
VPC network
Create a VPC network
VPC networks
External IP addresses
Firewall
Routes
VPC network peering
Shared VPC
Serverless VPC access
Packet mirroring
Flow logs
Turning on VPC flow logs doesn't affect performance, but some systems generate a large number of logs, which can increase costs in Stackdriver. Learn more
On
Off
CANCEL
DONE
ADD SUBNET
Dynamic routing mode
Regional
Cloud Routers will learn routes only in the region in which they were created
Global
Global routing lets you dynamically learn routes to and from all regions with a single VPN or interconnect and Cloud Router
Enable DNS API to pick a DNS policy
ENABLE
CREATE
CANCEL
Equivalent REST or command line

VPC Creation in other project :-



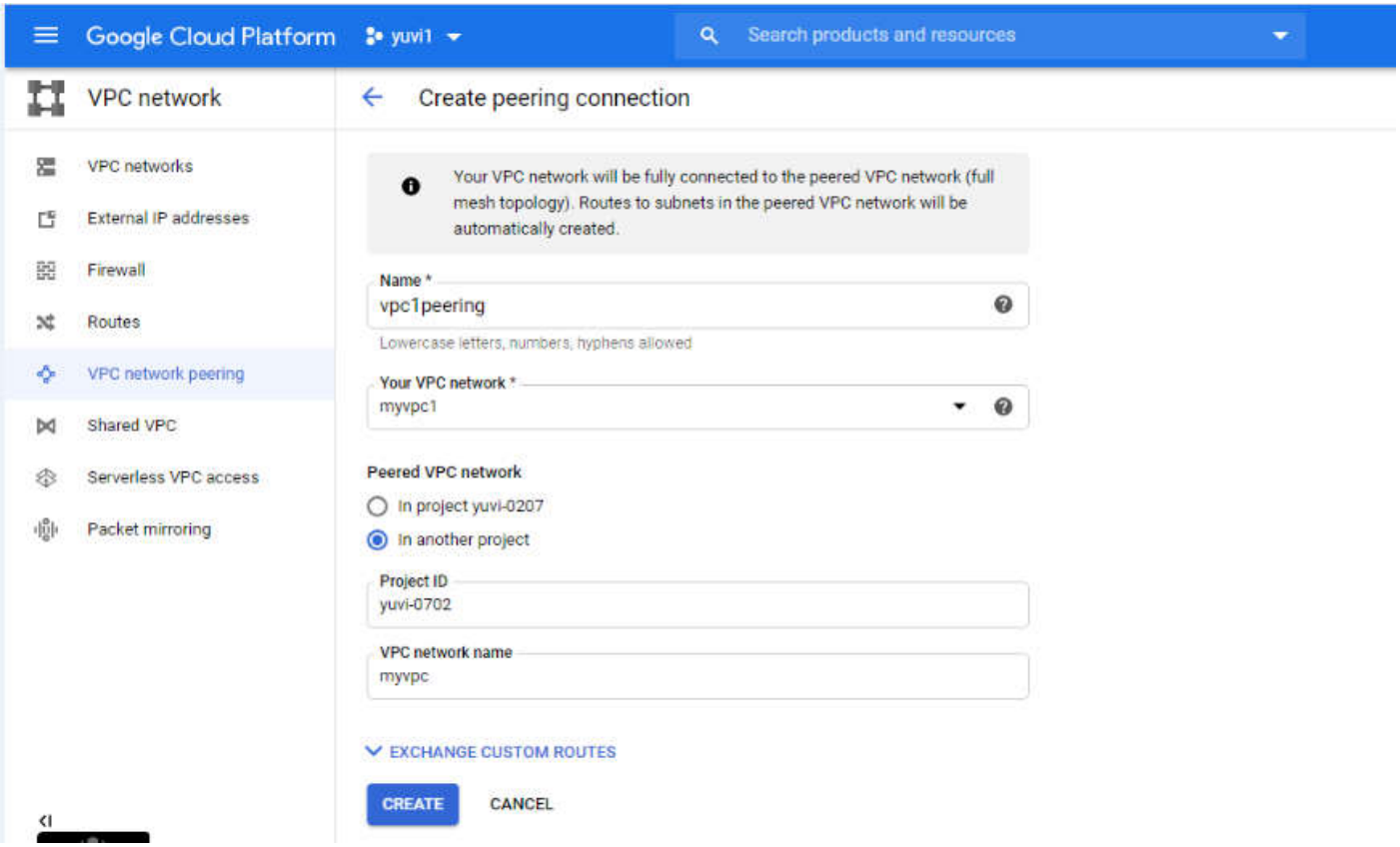




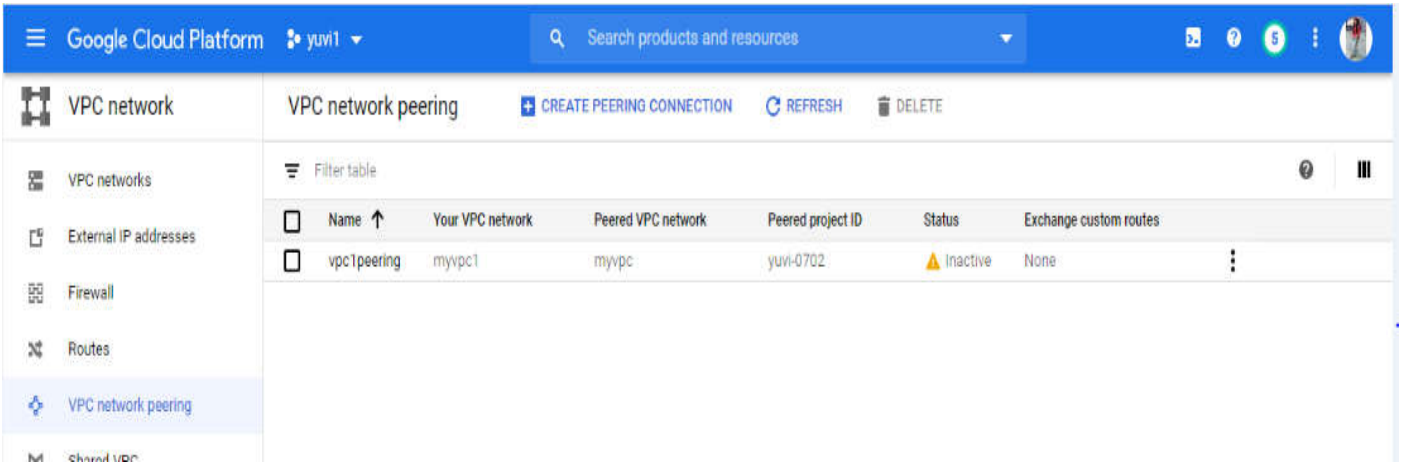
VPC peering

Google Cloud VPC Network **Peering** allows internal IP address connectivity across two Virtual Private Cloud (**VPC**) networks regardless of whether they belong to the same project or the same organization. Traffic stays within Google's network and doesn't traverse the public internet.

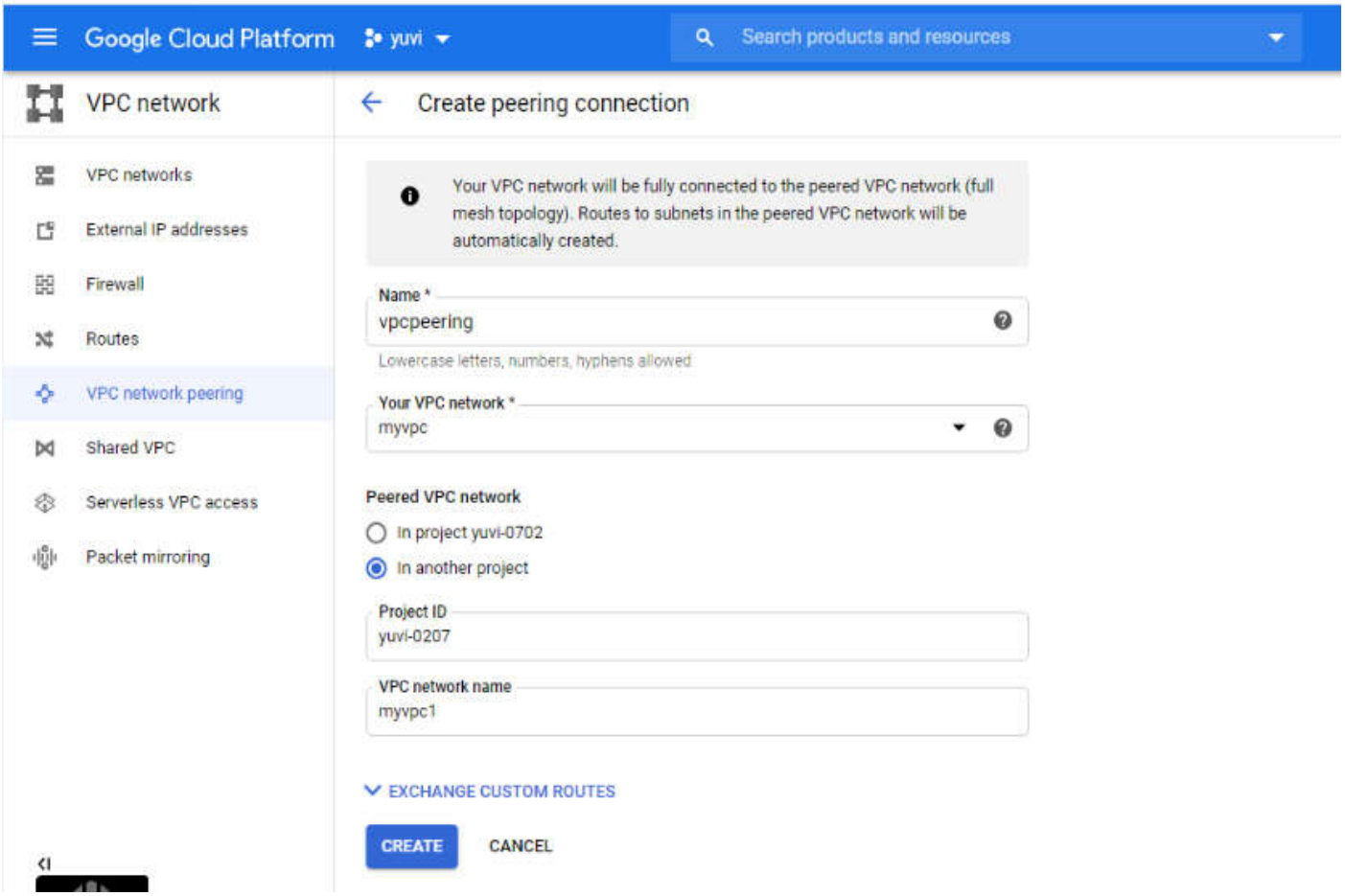
VPC peering in US region :-



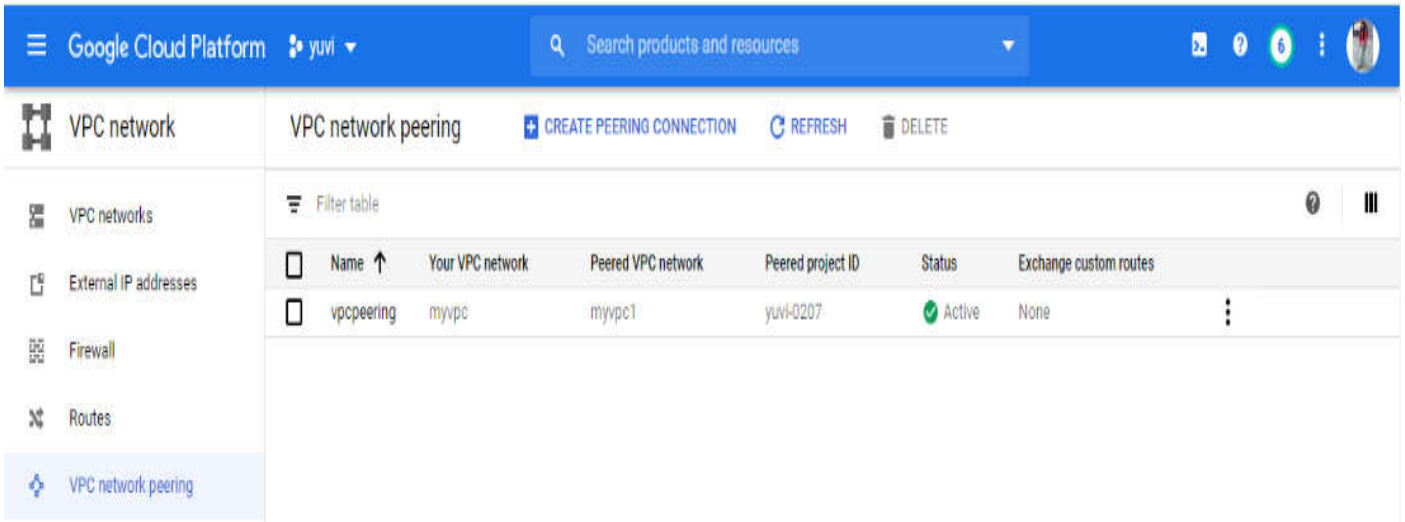
Currently it is inactive, but as soon as VPC peering will create in other region it will active automatically,



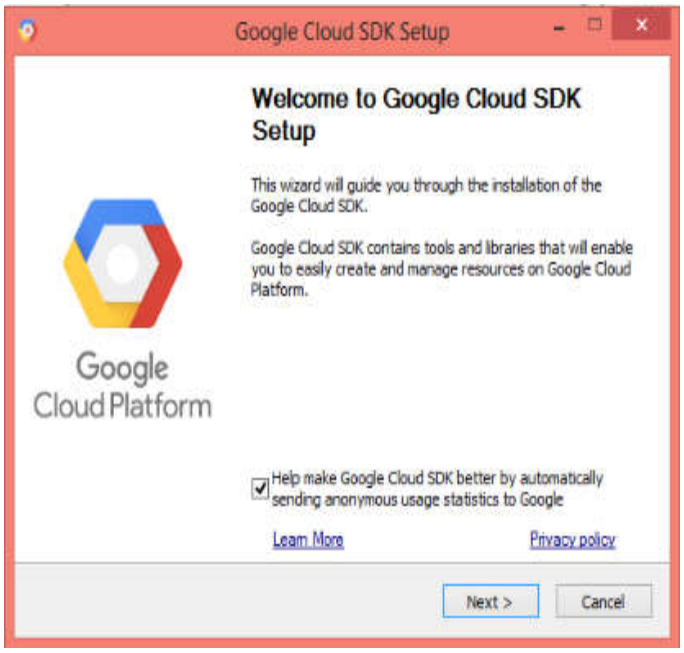
VPC peeriing in Singapore region :-

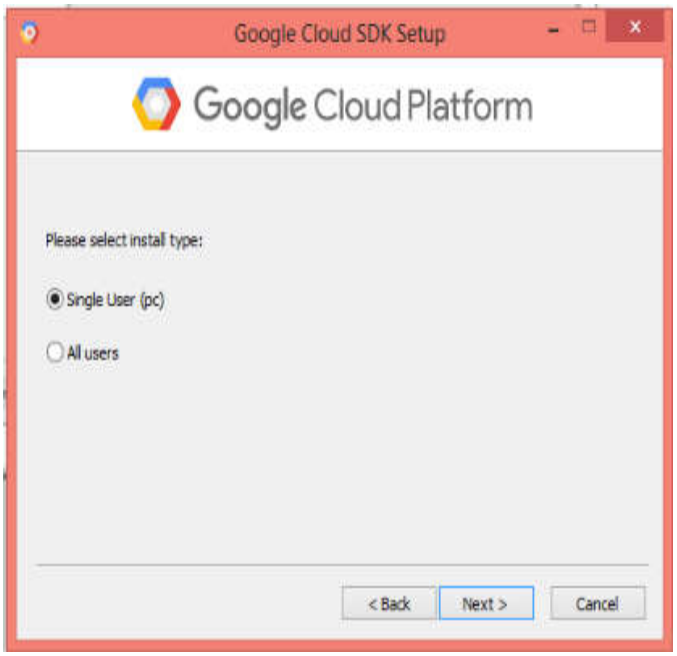


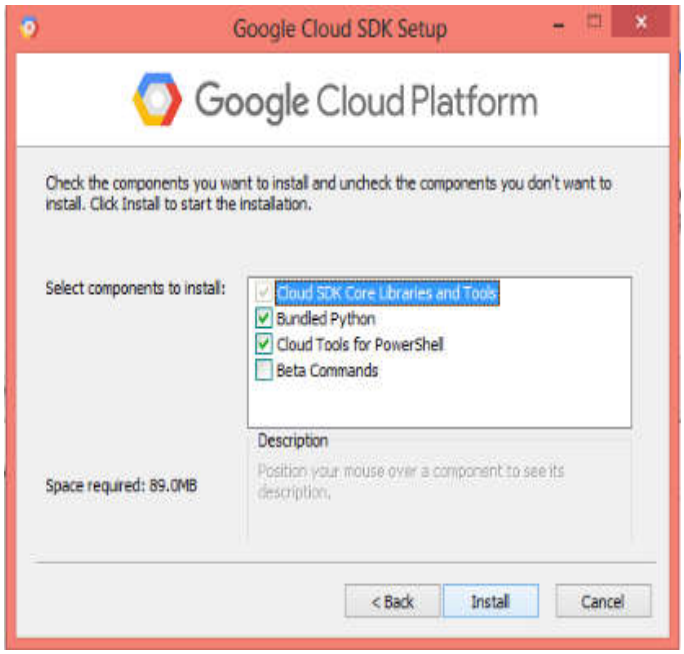
It is active now,

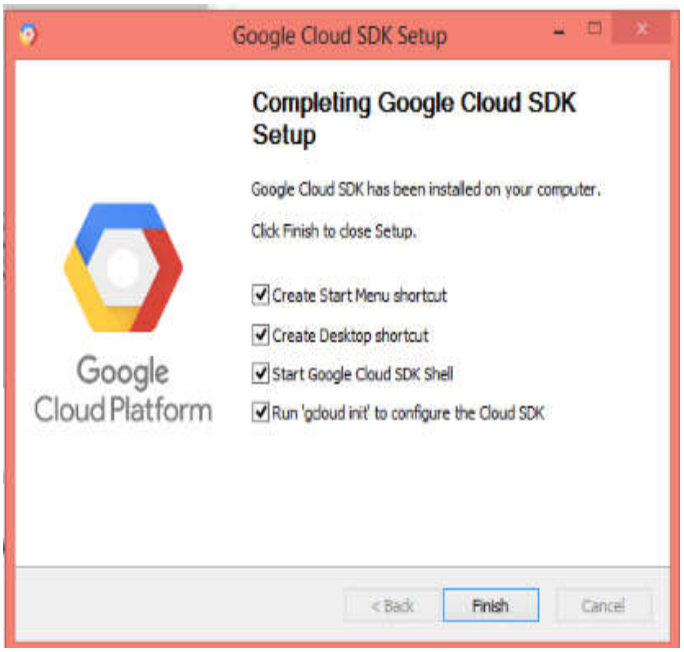


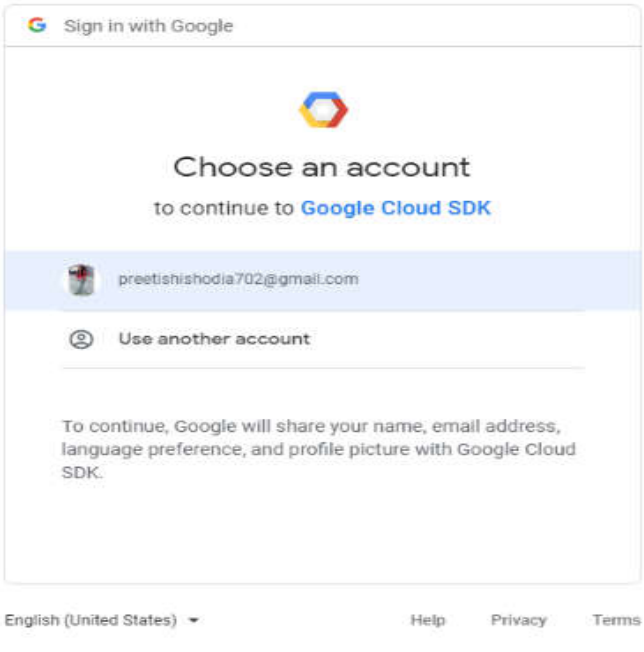
Now, setup Google SDKInstaller in baseOS to run gcloud command from baseOS.

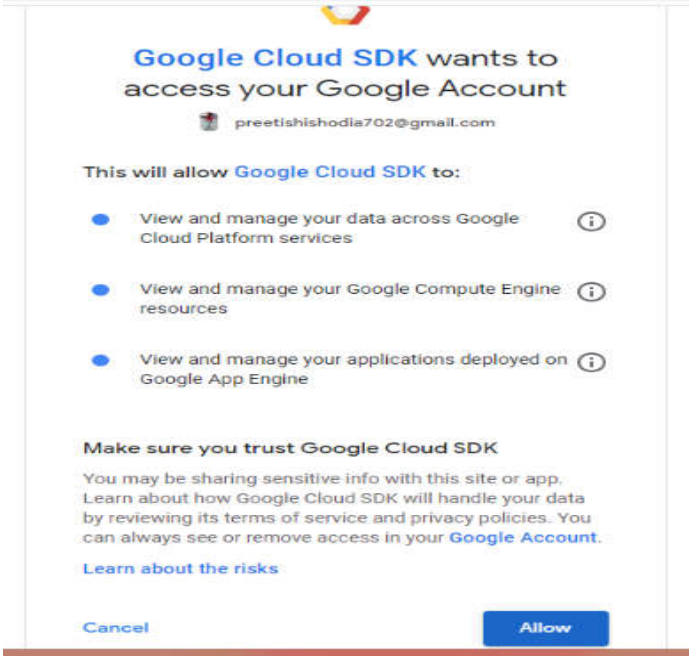

Google Cloud SDK Setup
Welcome to Google Cloud SDK Setup
This wizard will guide you through the installation of the Google Cloud SDK.
Google Cloud SDK contains tools and libraries that will enable you to easily create and manage resources on Google Cloud Platform.
Google Cloud Platform
Help make Google Cloud SDK better by automatically sending anonymous usage statistics to Google
Learn More
Privacy policy
Next >
Cancel

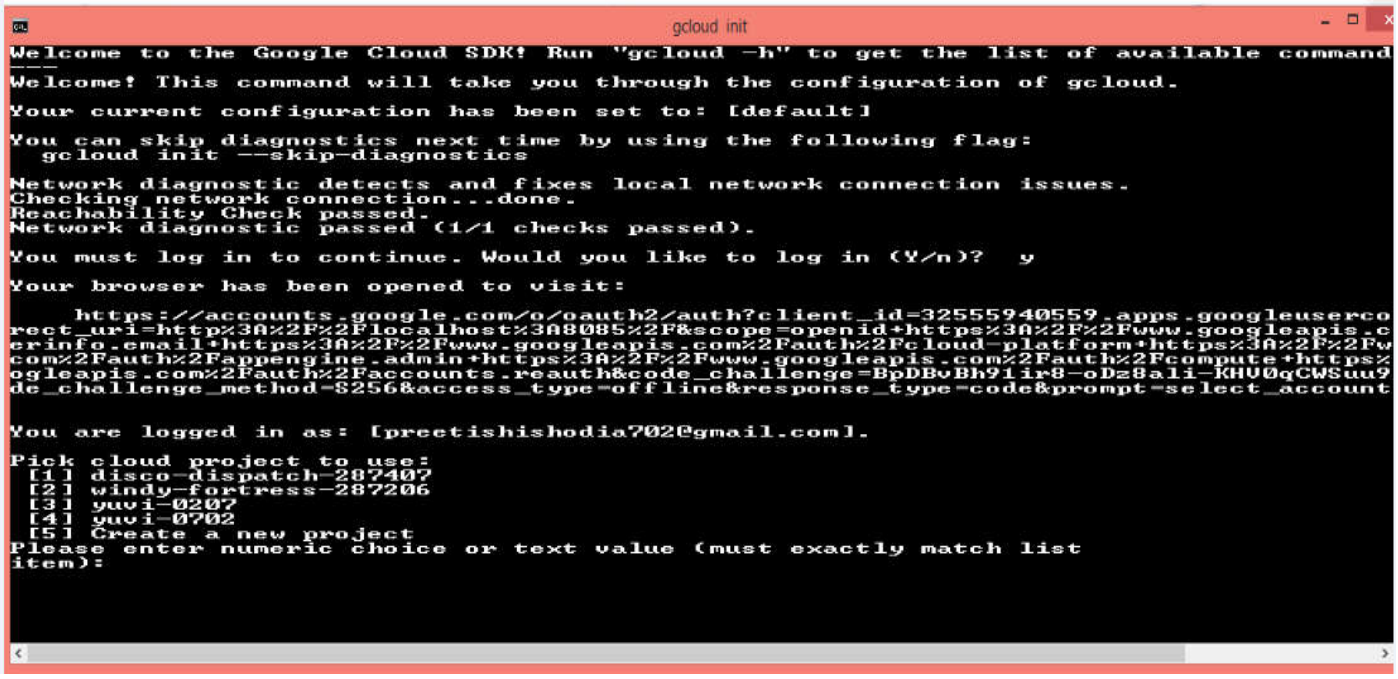

Google Cloud SDK Setup
Google Cloud Platform
Please select install type:
Single User (pc)
All users
< Back
Next >
Cancel


Google Cloud SDK Setup
Google Cloud Platform
Check the components you want to install and uncheck the components you don't want to install. Click Install to start the installation.
Select components to install:
Cloud SDK Core Libraries and Tools
Bundled Python
Cloud Tools for PowerShell
Beta Commands
Description
Position your mouse over a component to see its description.
Space required: 89.0MB
< Back
Install
Cancel


Google Cloud SDK Setup
Completing Google Cloud SDK Setup
Google Cloud SDK has been installed on your computer.
Click Finish to close Setup.
Google Cloud Platform
Create Start Menu shortcut
Create Desktop shortcut
Start Google Cloud SDK Shell
Run 'gcloud init' to configure the Cloud SDK
< Back
Finish
Cancel


Sign in with Google
Choose an account
to continue to Google Cloud SDK
preetishishodia702@gmail.com
Use another account
To continue, Google will share your name, email address, language preference, and profile picture with Google Cloud SDK.
English (United States)
Help
Privacy
Terms

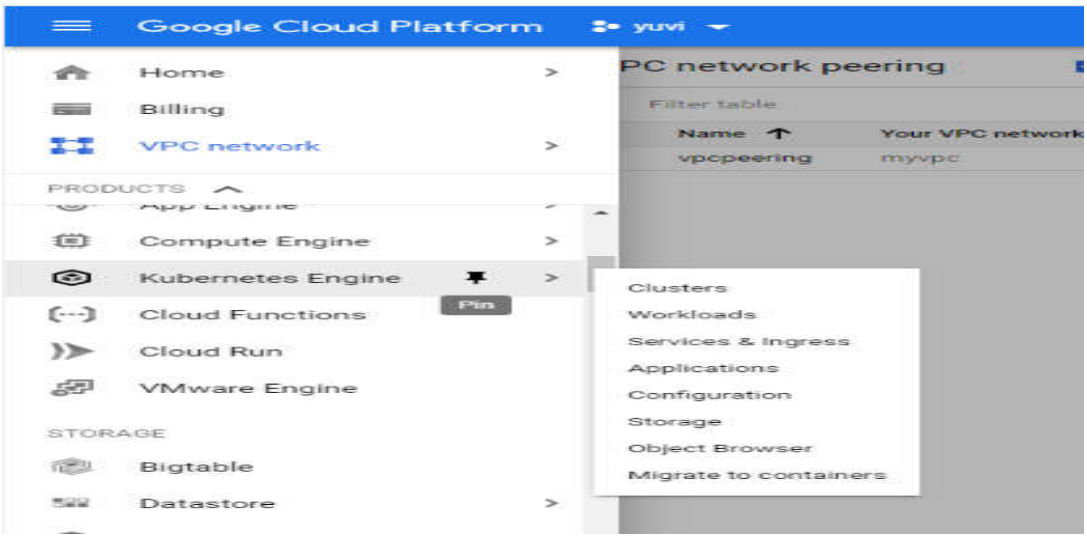

Google Cloud SDK wants to access your Google Account
preetishishodia702@gmail.com
This will allow Google Cloud SDK to:
View and manage your data across Google Cloud Platform services
View and manage your Google Compute Engine resources
View and manage your applications deployed on Google App Engine
Make sure you trust Google Cloud SDK
You may be sharing sensitive info with this site or app. Learn about how Google Cloud SDK will handle your data by reviewing its terms of service and privacy policies. You can always see or remove access in your Google Account.
Learn about the risks
Cancel
Allow

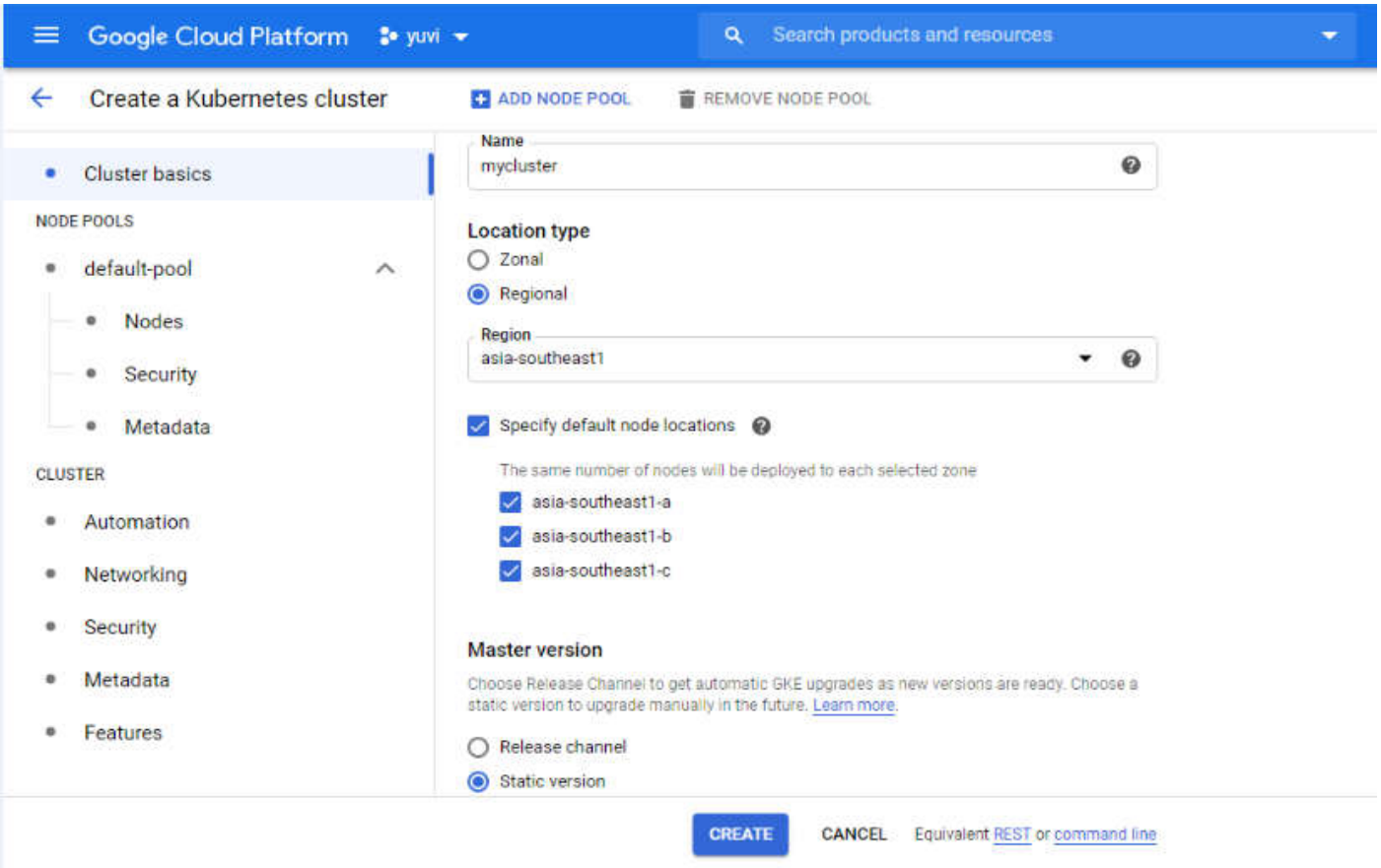


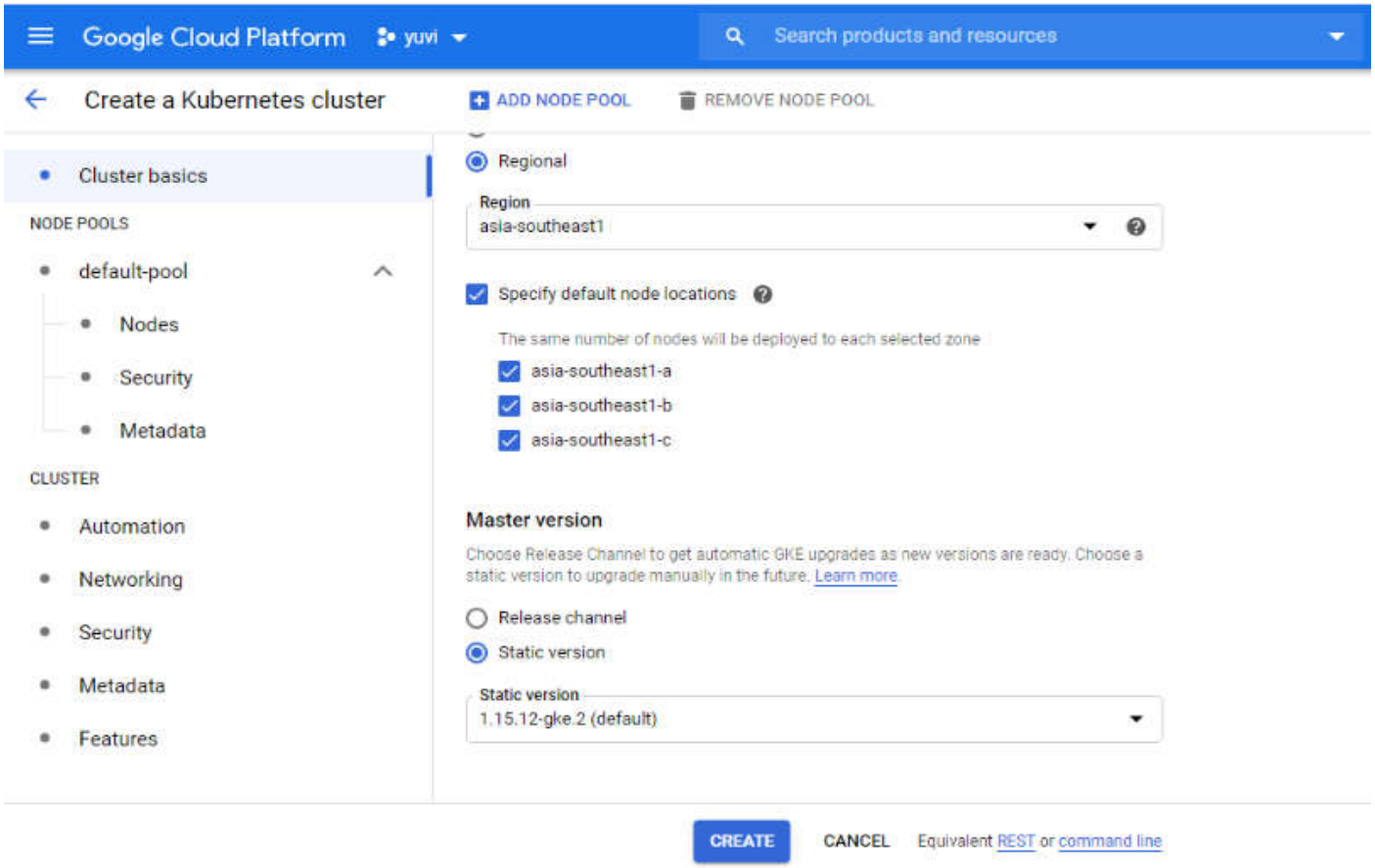
Creation of GKE (Google Kubernetes Engine) :-

Google Kubernetes Engine (**GKE**) provides a managed environment for deploying, managing, and scaling your containerized applications using Google infrastructure.

Creation of Cluster in asia-southeast1 region :-




Google Cloud Platform
yuvi
Search products and resources
Create a Kubernetes cluster
ADD NODE POOL
REMOVE NODE POOL
Cluster basics
NODE POOLS
default-pool
Nodes
Security
Metadata
CLUSTER
Automation
Networking
Security
Metadata
Features
Name
mycluster
Location type
Zonal
Regional
Region
asia-southeast1
Specify default node locations
The same number of nodes will be deployed to each selected zone
asia-southeast1-a
asia-southeast1-b
asia-southeast1-c
Master version
Choose Release Channel to get automatic GKE upgrades as new versions are ready. Choose a static version to upgrade manually in the future. Learn more.
Release channel
Static version
CREATE
CANCEL
Equivalent REST or command line


Google Cloud Platform
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default-pool
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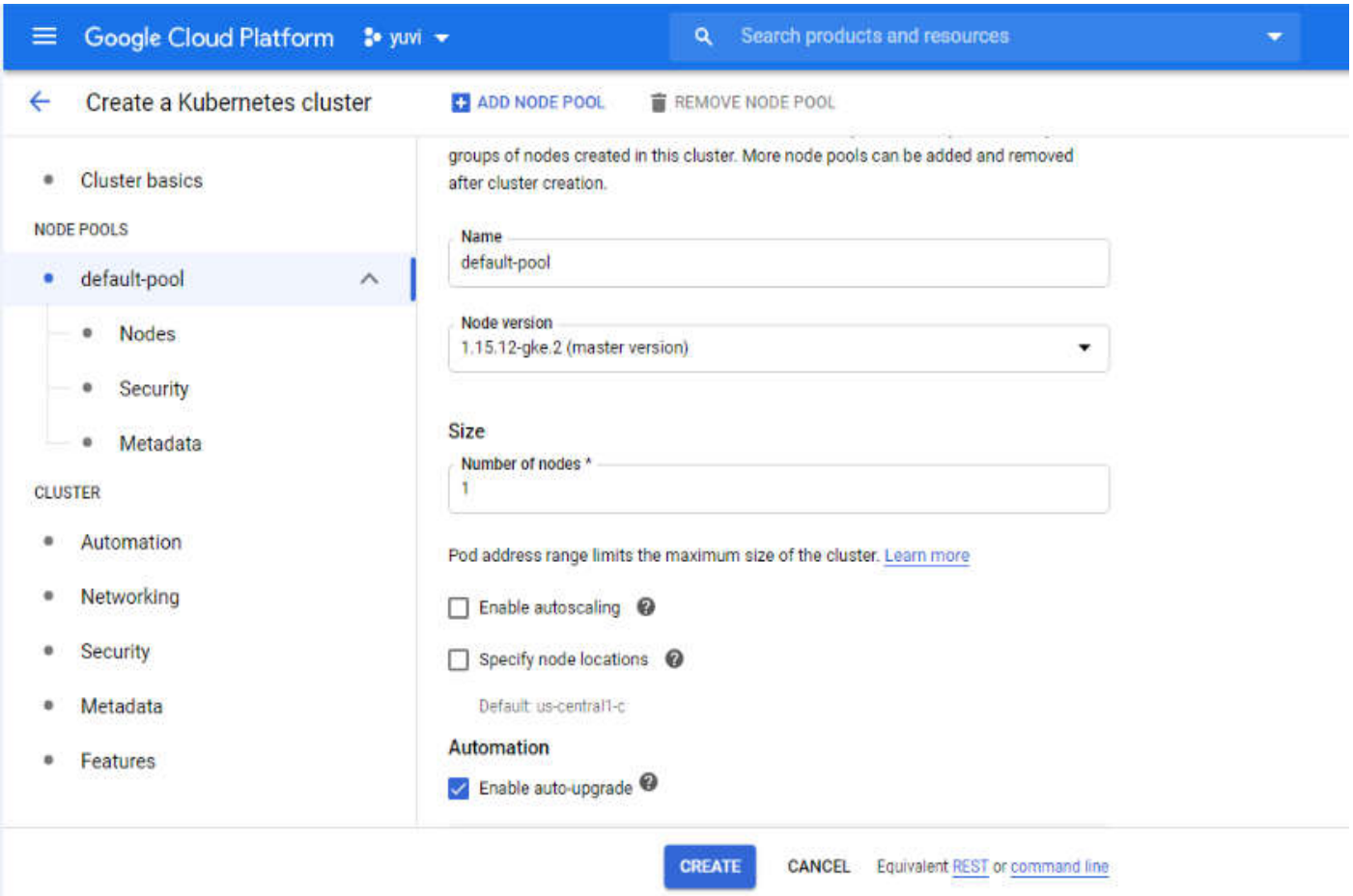
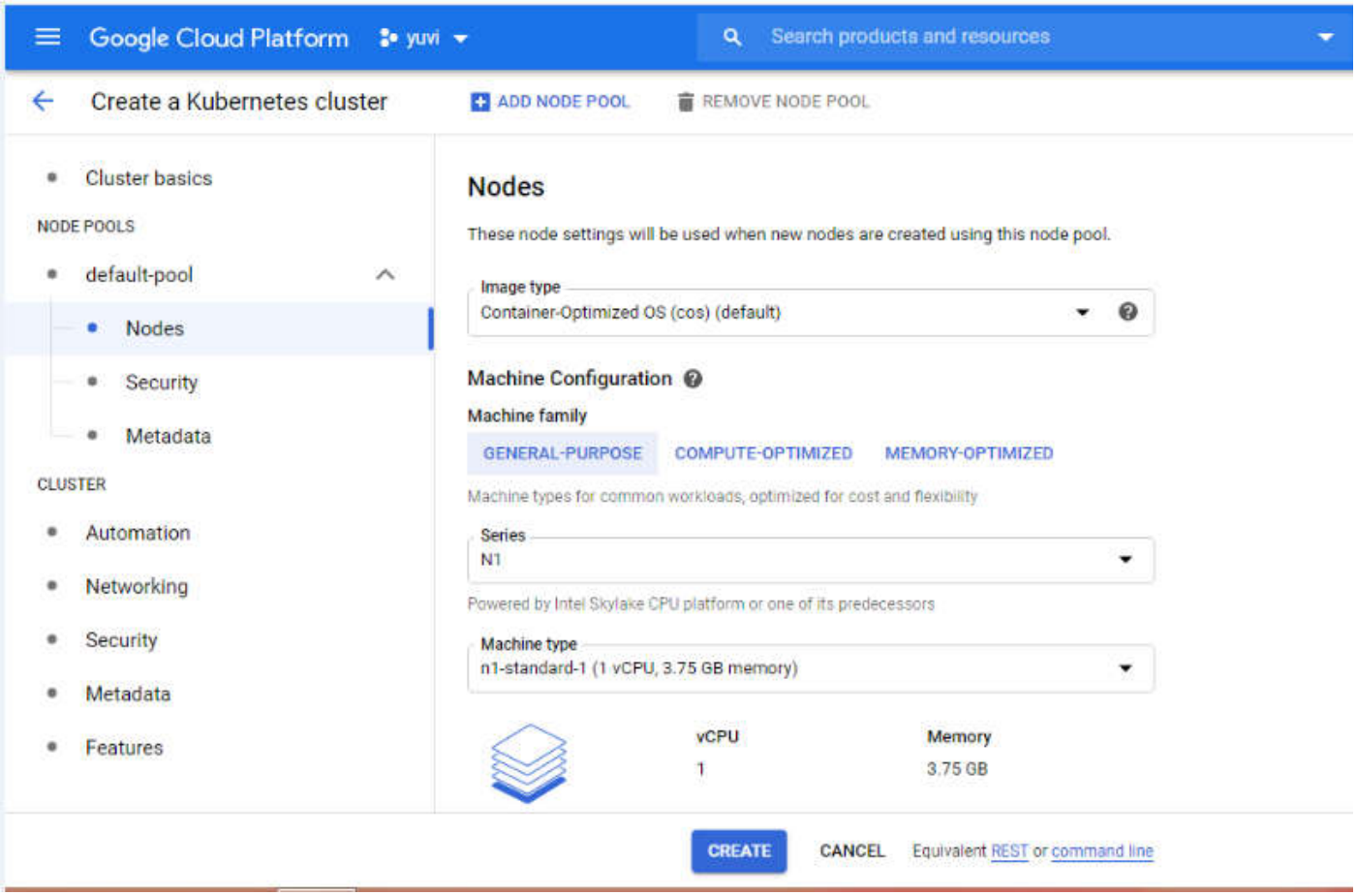
asia-southeast1
Specify default node locations
The same number of nodes will be deployed to each selected zone
asia-southeast1-a
asia-southeast1-b
asia-southeast1-c
Master version
Choose Release Channel to get automatic GKE upgrades as new versions are ready. Choose a static version to upgrade manually in the future. Learn more
Release channel
Static version
Static version
1.15.12-gke.2 (default)
CREATE
CANCEL
Equivalent REST or command line


Google Cloud Platform
yuvi
Search products and resources
Create a Kubernetes cluster
ADD NODE POOL
REMOVE NODE POOL
Cluster basics
NODE POOLS
default-pool
Nodes
Security
Metadata
CLUSTER
Automation
Networking
Security
Metadata
Features
groups of nodes created in this cluster. More node pools can be added and removed after cluster creation.
Name
default-pool
Node version
1.15.12-gke.2 (master version)
Size
Number of nodes *
1
Pod address range limits the maximum size of the cluster. Learn more
Enable autoscaling
Specify node locations
Default: us-central1-c
Automation
Enable auto-upgrade
CREATE
CANCEL
Equivalent REST or command line


Google Cloud Platform
yuvi
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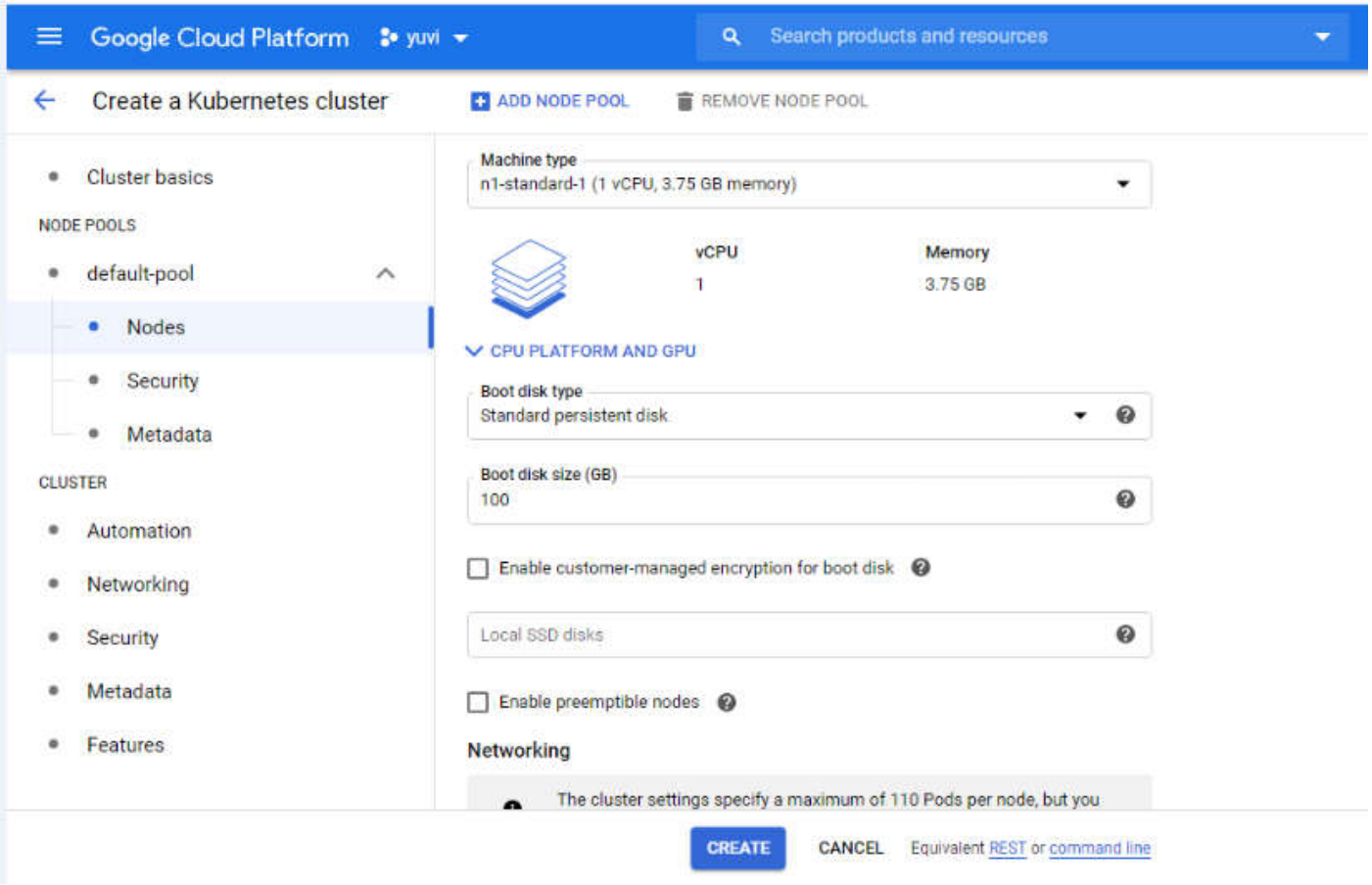
Create a Kubernetes cluster
ADD NODE POOL
REMOVE NODE POOL
Cluster basics
NODE POOLS
default-pool
Nodes
Security
Metadata
CLUSTER
Automation
Networking
Security
Metadata
Features
Nodes
These node settings will be used when new nodes are created using this node pool.
Image type
Container-Optimized OS (cos) (default)
Machine Configuration
Machine family
GENERAL-PURPOSE
COMPUTE-OPTIMIZED
MEMORY-OPTIMIZED
Machine types for common workloads, optimized for cost and flexibility
Series
N1
Powered by Intel Skylake CPU platform or one of its predecessors
Machine type
n1-standard-1 (1 vCPU, 3.75 GB memory)
vCPU
1
Memory
3.75 GB
CREATE
CANCEL
Equivalent REST or command line


Google Cloud Platform
yuvi
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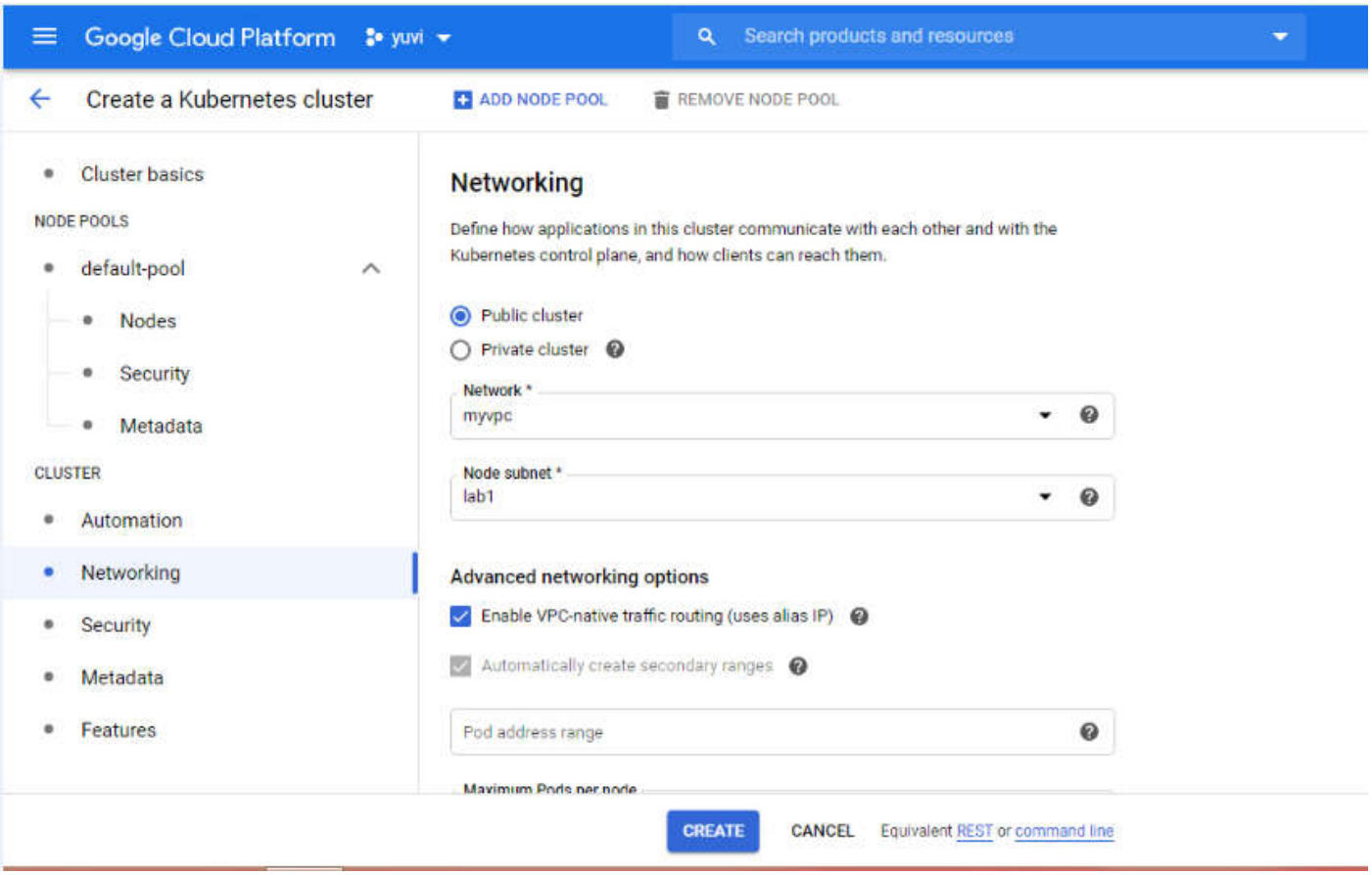
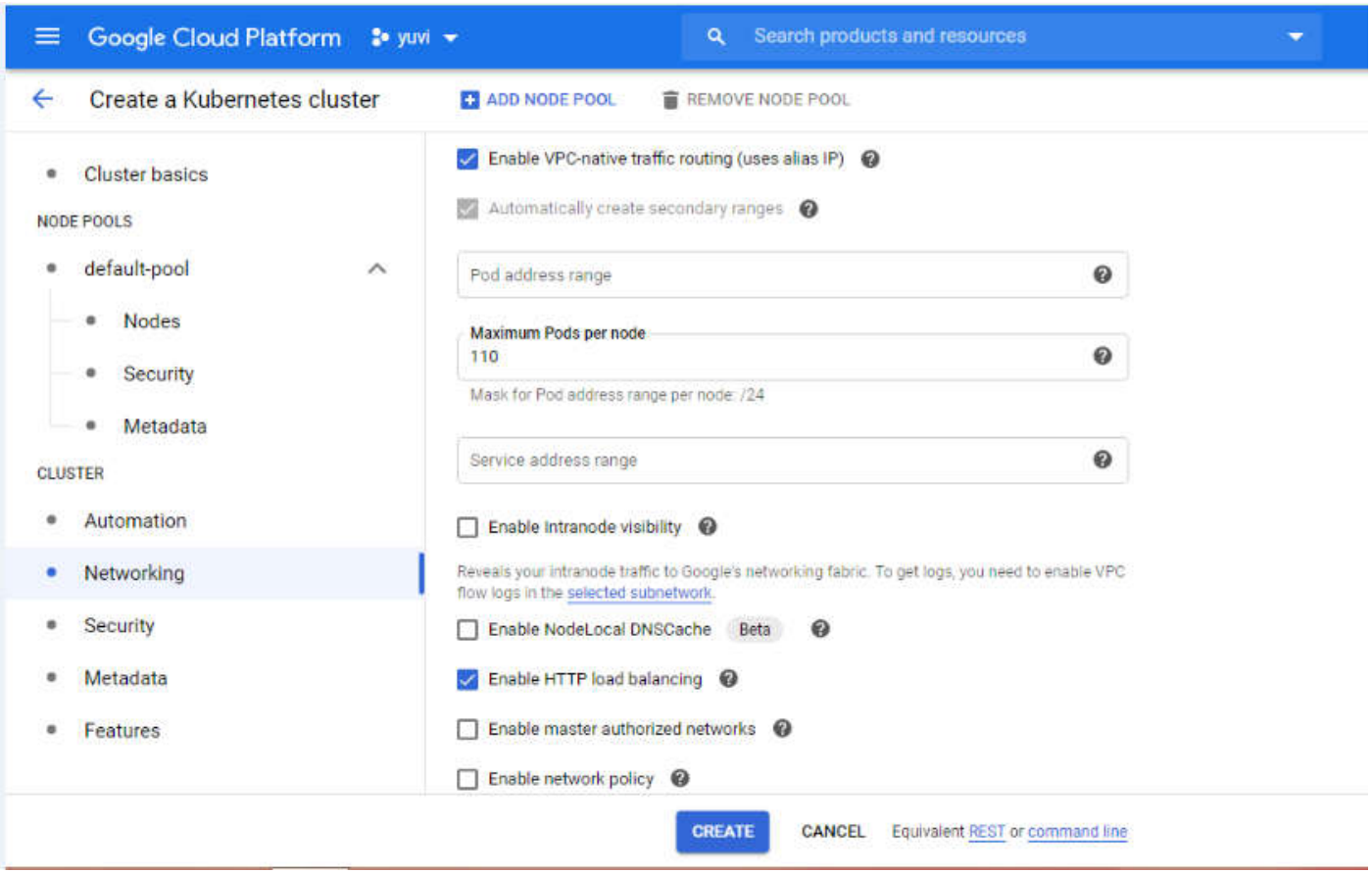
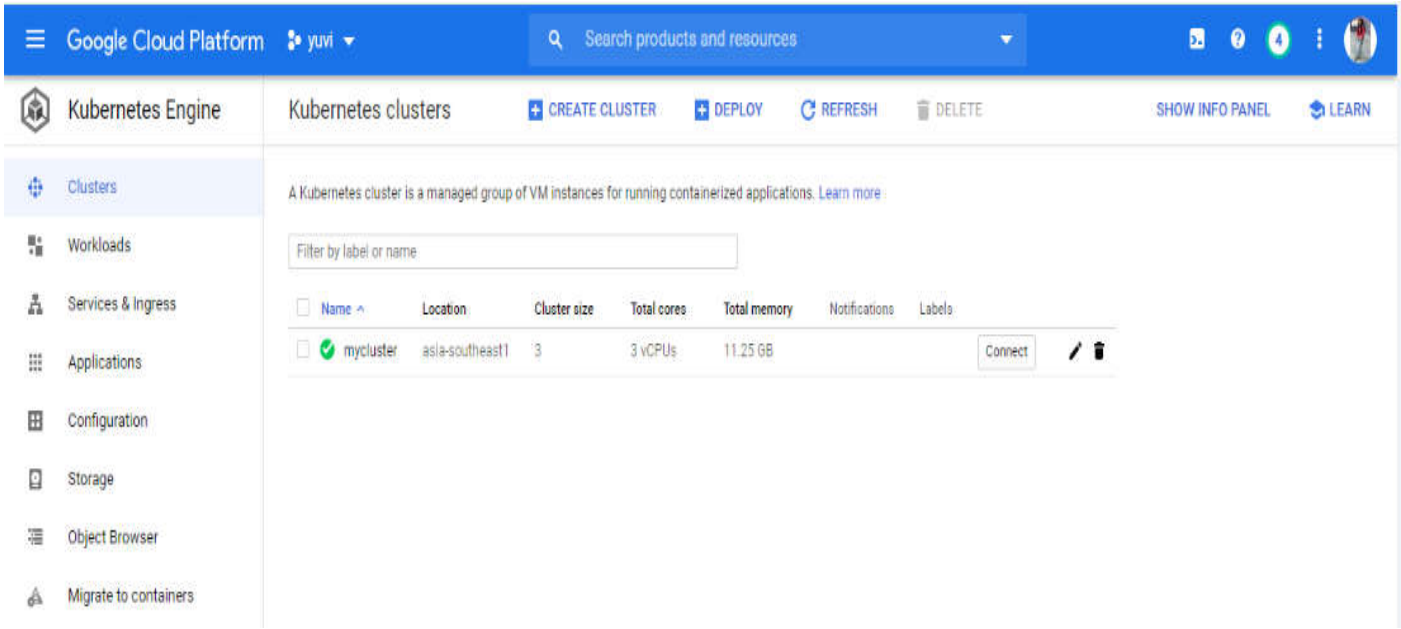
ADD NODE POOL
REMOVE NODE POOL
Cluster basics
NODE POOLS
default-pool
Nodes
Security
Metadata
CLUSTER
Automation
Networking
Security
Metadata
Features
Machine type
n1-standard-1 (1 vCPU, 3.75 GB memory)
vCPU
1
Memory
3.75 GB
CPU PLATFORM AND GPU
Boot disk type
Standard persistent disk
Boot disk size (GB)
100
Enable customer-managed encryption for boot disk
Local SSD disks
Enable preemptible nodes
Networking
The cluster settings specify a maximum of 110 Pods per node, but you
CREATE
CANCEL
Equivalent REST or command line

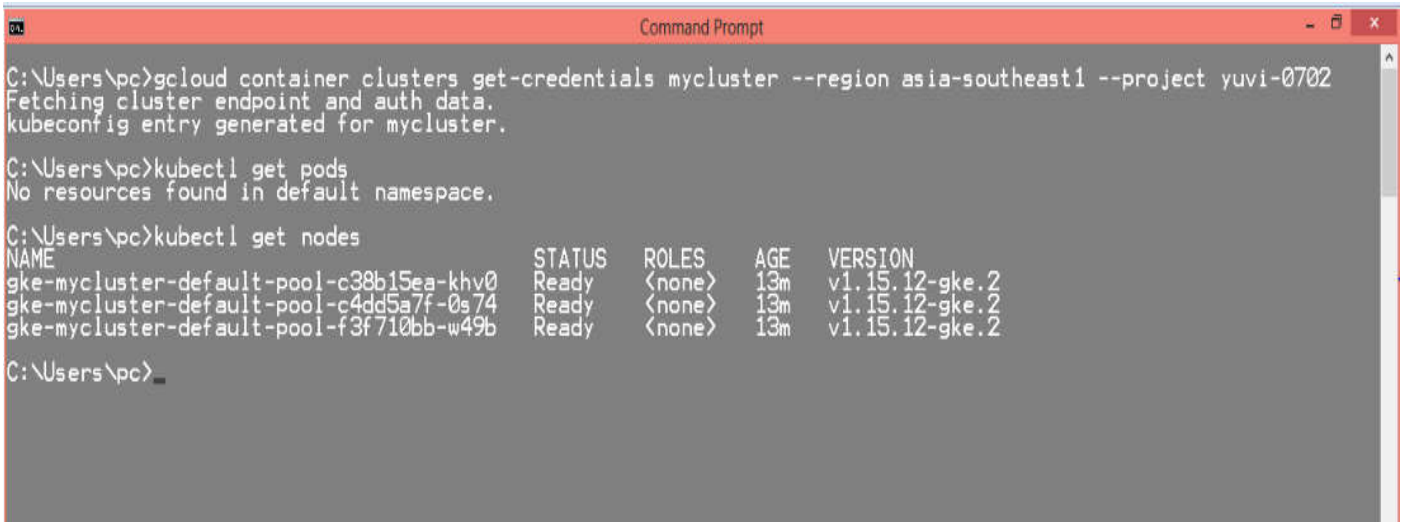

Google Cloud Platform
yuvi
Search products and resources
Create a Kubernetes cluster
ADD NODE POOL
REMOVE NODE POOL
Cluster basics
NODE POOLS
default-pool
Nodes
Security
Metadata
CLUSTER
Automation
Networking
Security
Metadata
Features
Networking
Define how applications in this cluster communicate with each other and with the Kubernetes control plane, and how clients can reach them.
Public cluster
Private cluster
Network *
myvpc
Node subnet *
lab1
Advanced networking options
Enable VPC-native traffic routing (uses alias IP)
Automatically create secondary ranges
Pod address range
Maximum Pods per node
CREATE
CANCEL
Equivalent REST or command line



Here, Kubernetes cluster is launched :-

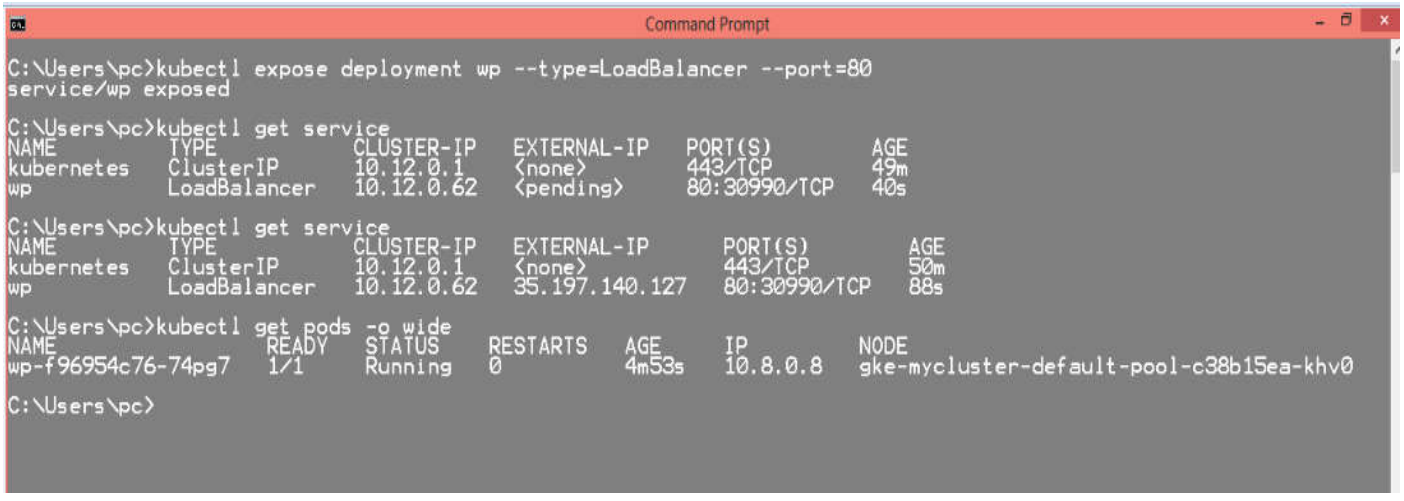


Now, we also can check this by using CLI from baseOS.

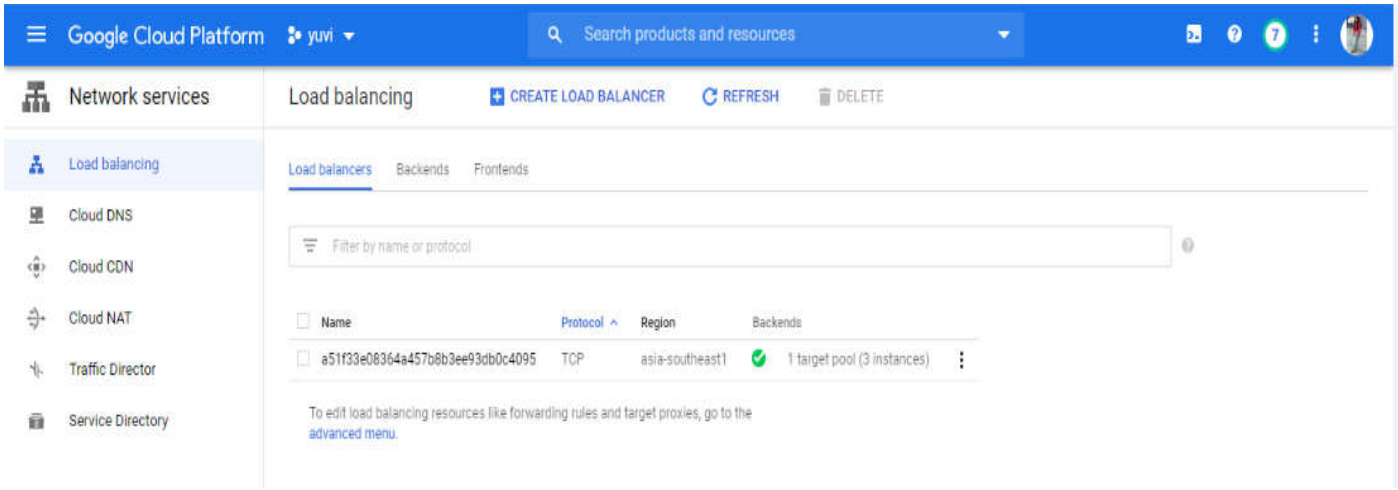


Now, launching wordpress on the top of this kubernetes cluster :-

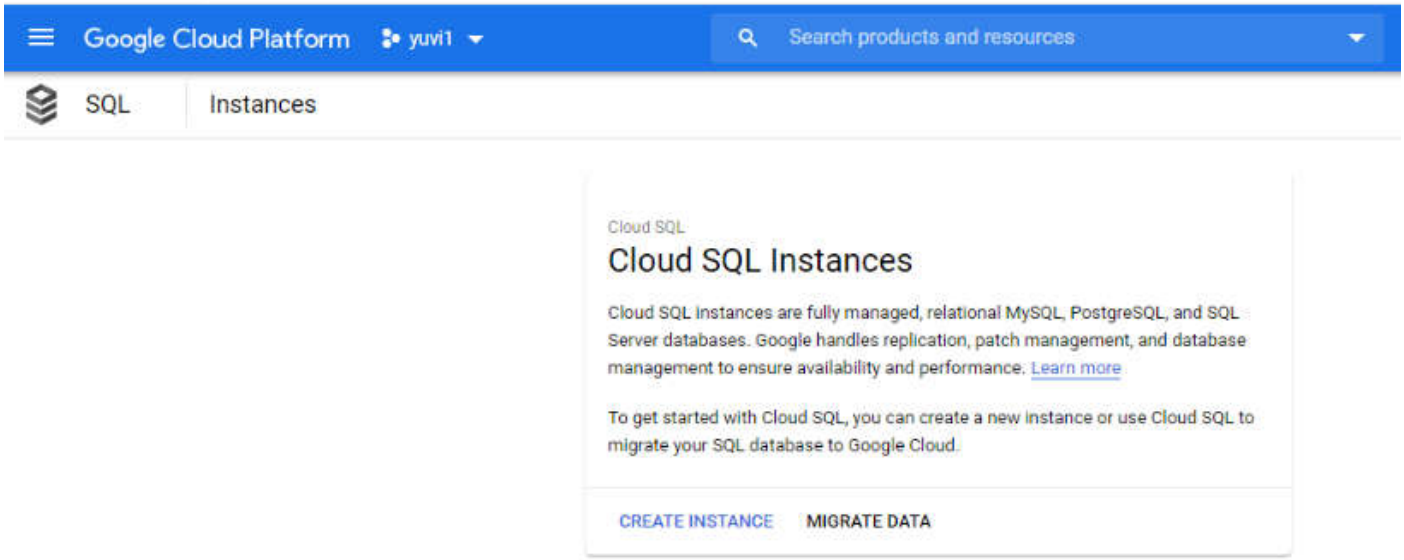
At that moment there is no LoadBalancer, but as soon as you expose the pod running on the top of kubernetes cluster, a LoadBalancer will create automatically.

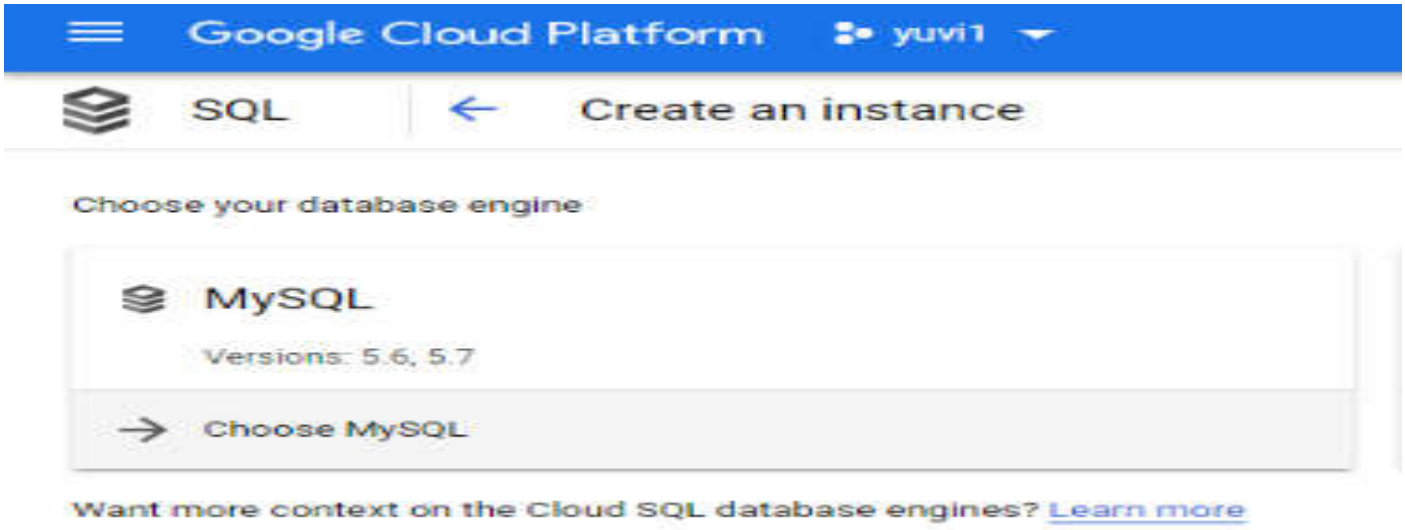


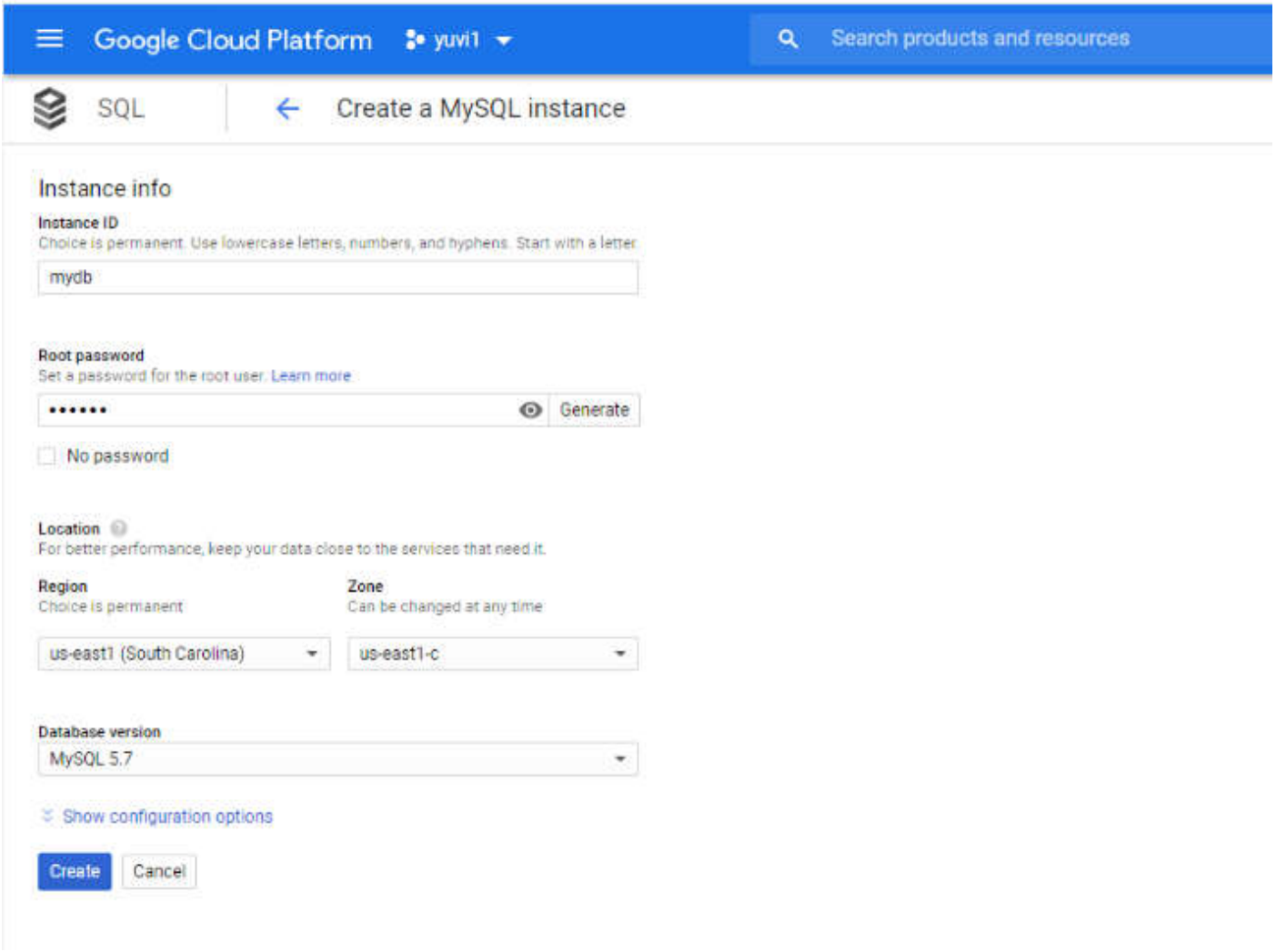
LoadBalancer is created



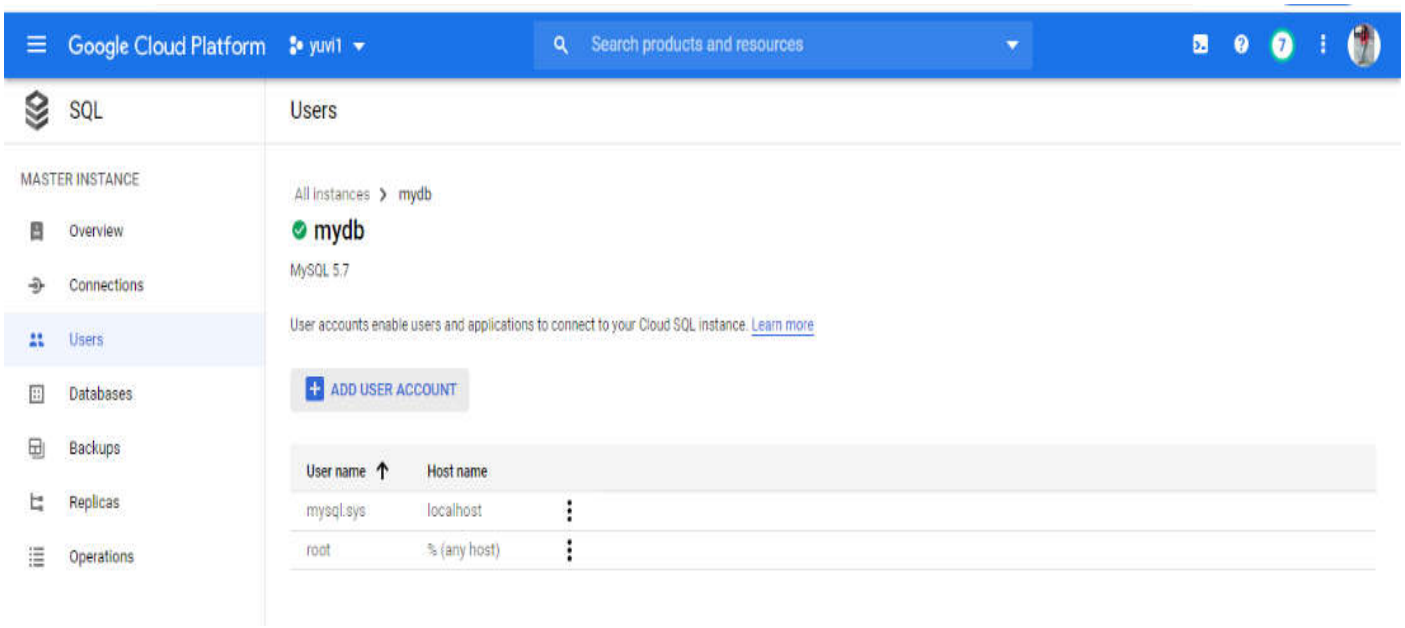
Creation of SQL server in **us-east1** region in other project :-



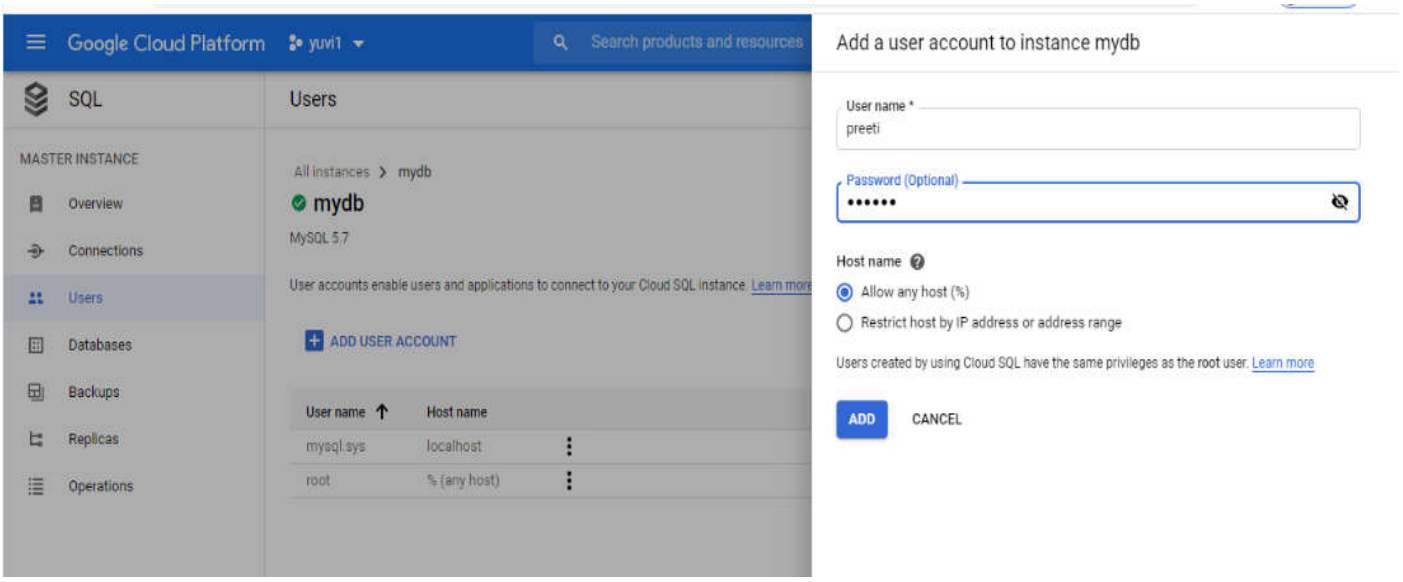


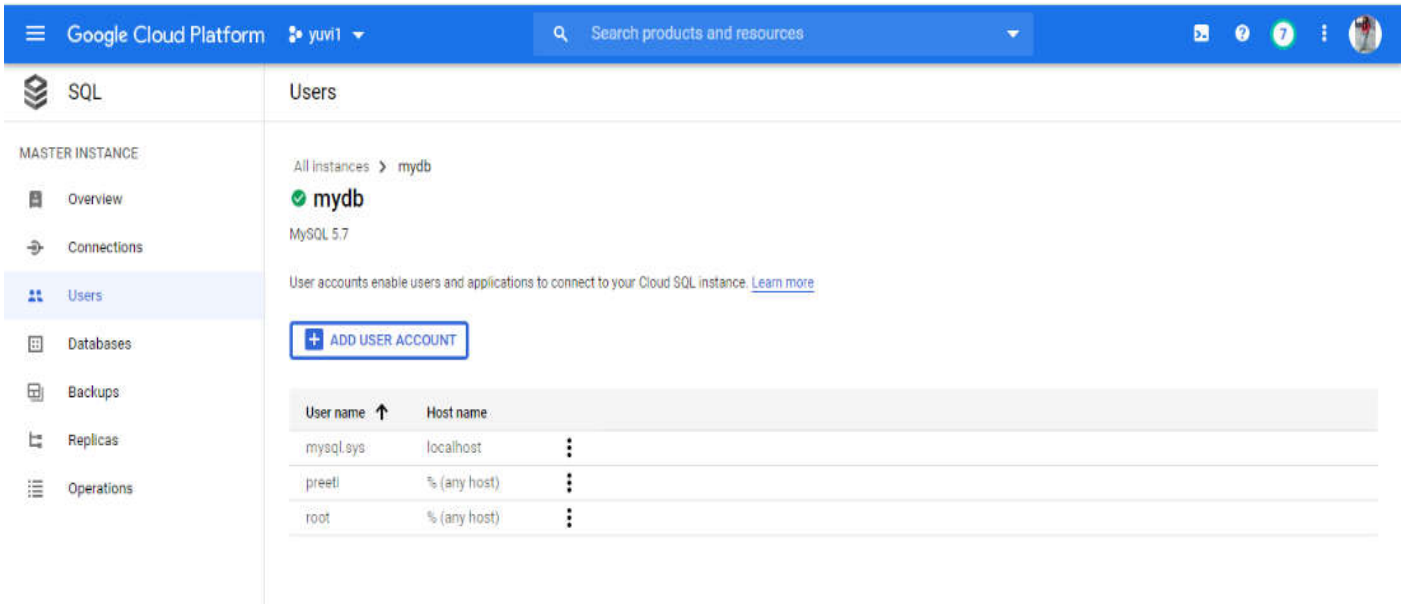


Here, MySQL Database is created :-

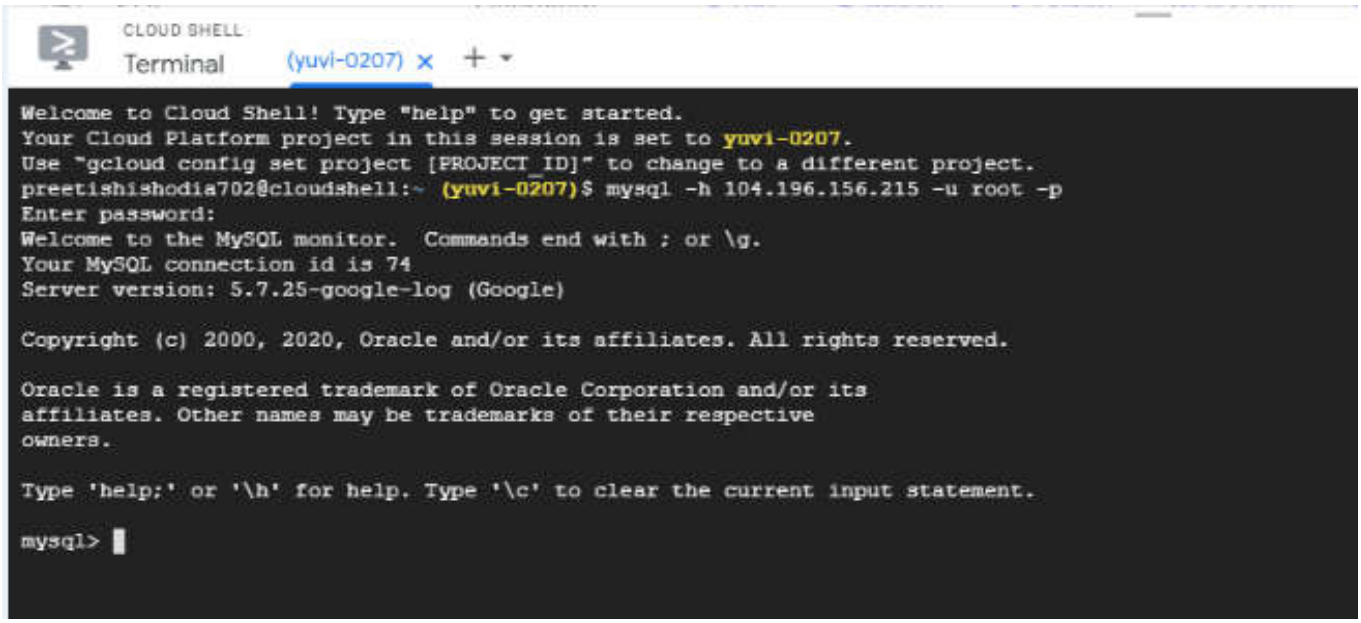


Add a user to that database,





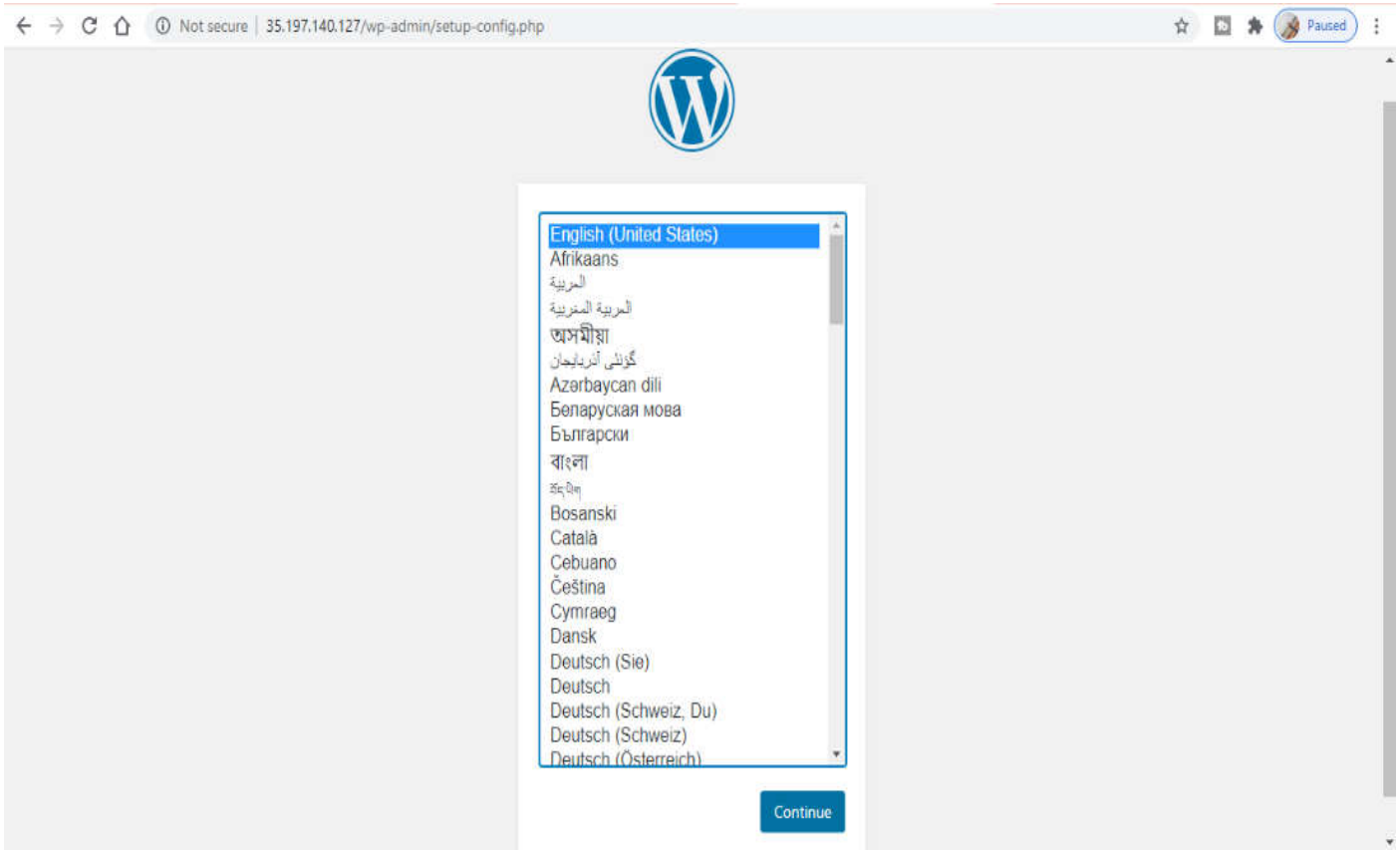
Here, we can access the database:-

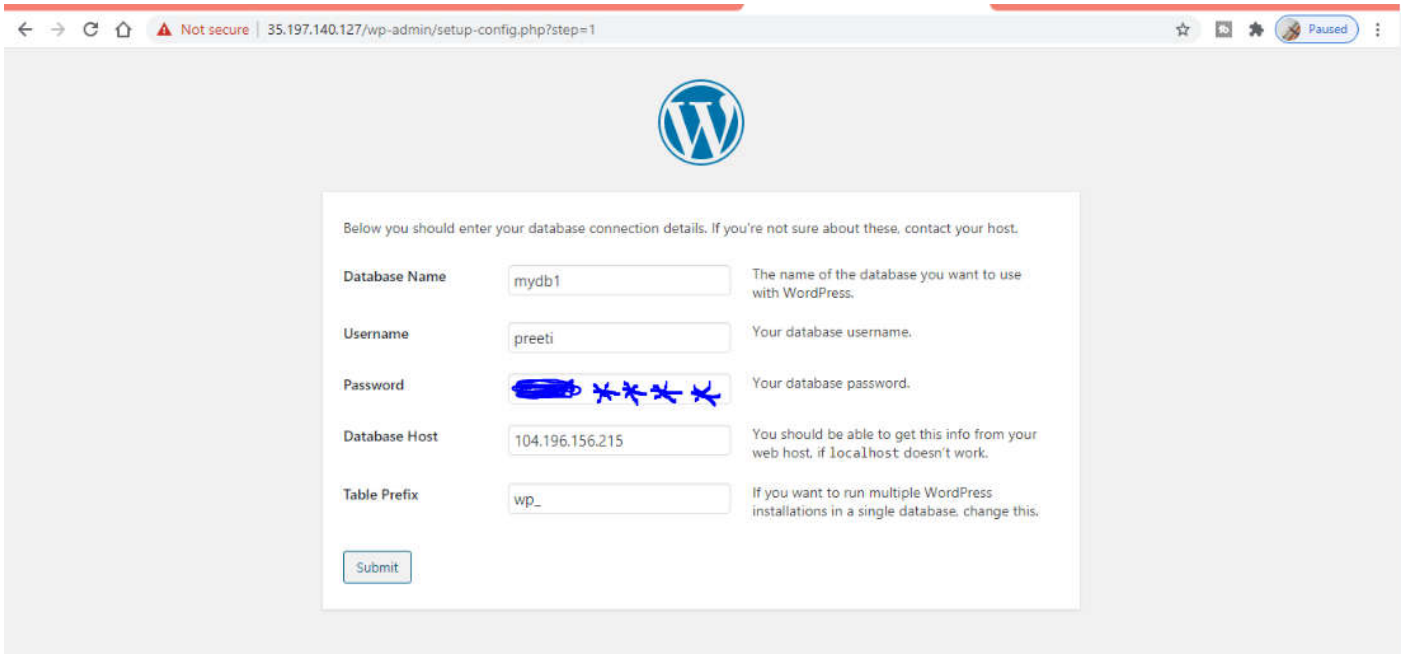


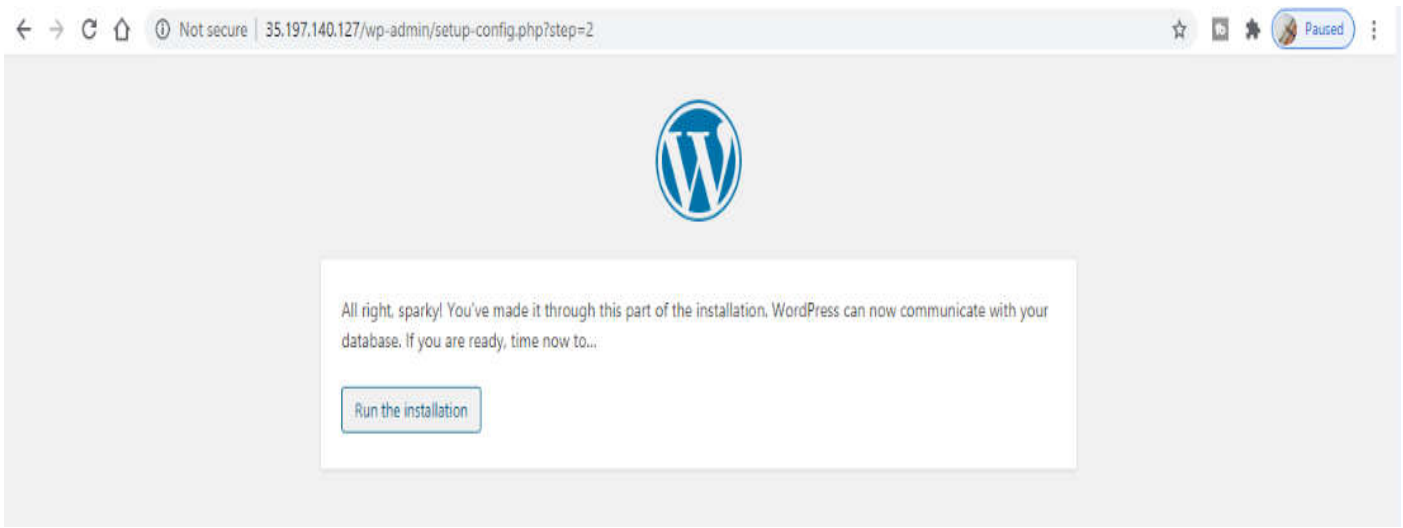
MySQL commands

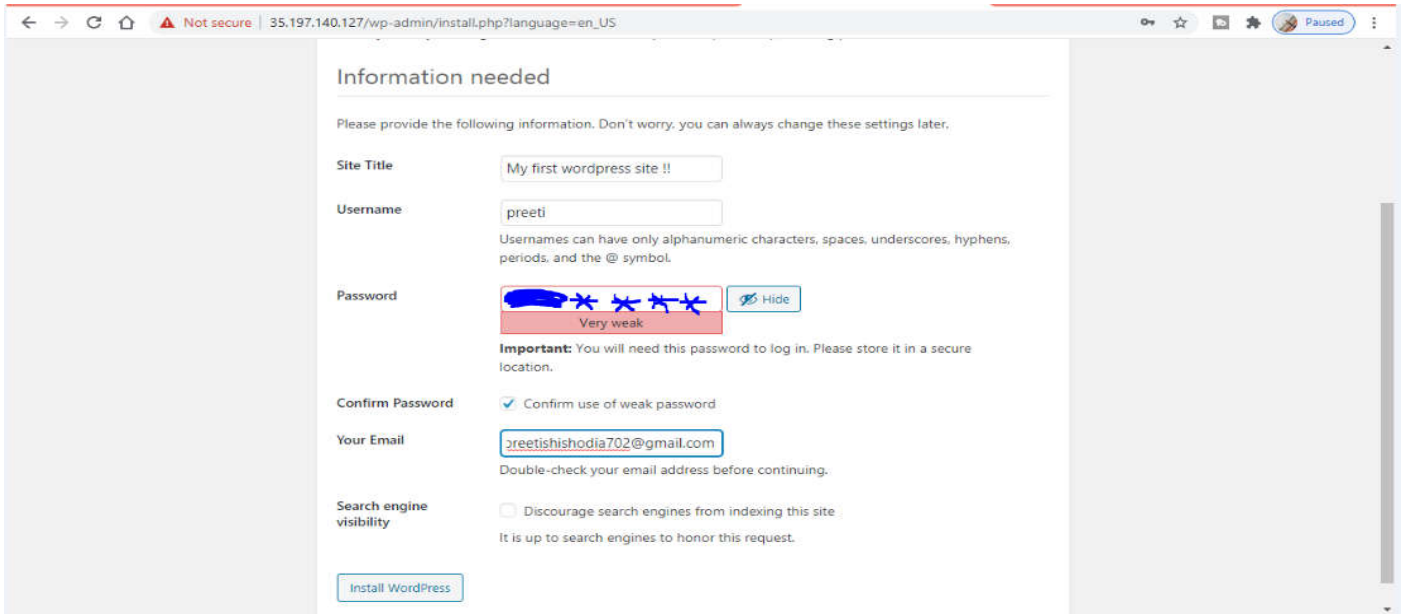
```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
4 rows in set (0.23 sec)

mysql> create database mydb1
    -> ;
Query OK, 1 row affected (0.24 sec)

mysql> use mydb1
Database changed
mysql> show tables;
Empty set (0.22 sec)

mysql>
```

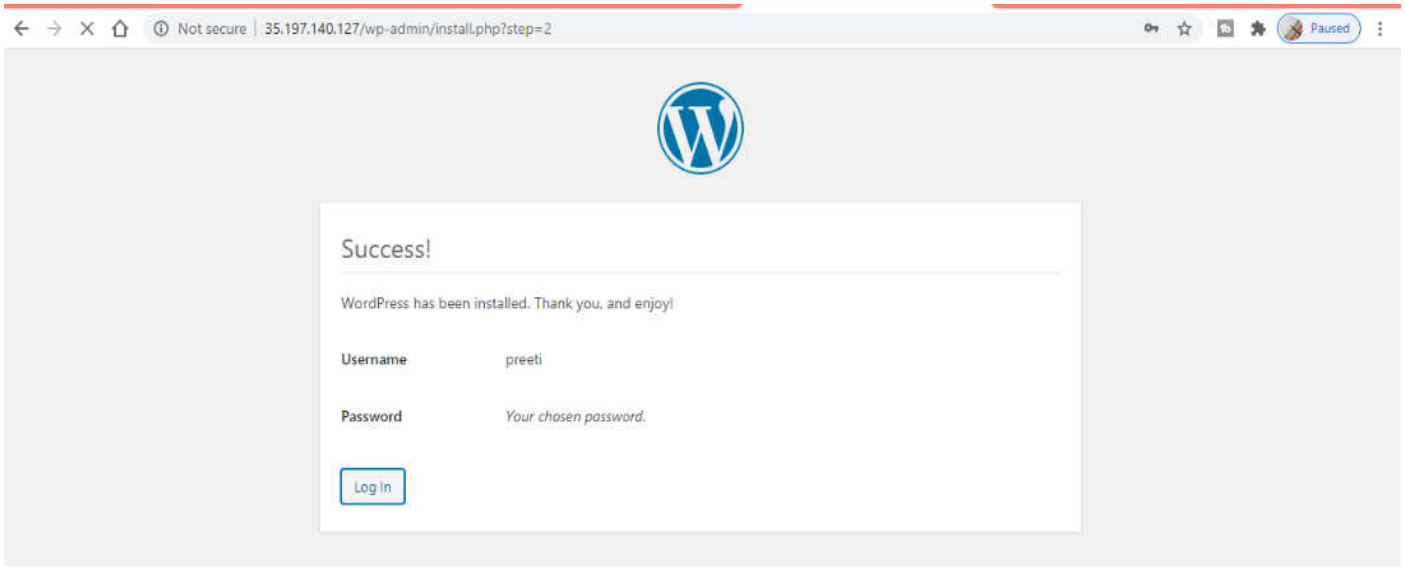
Wordpress installation and database attachment part:-



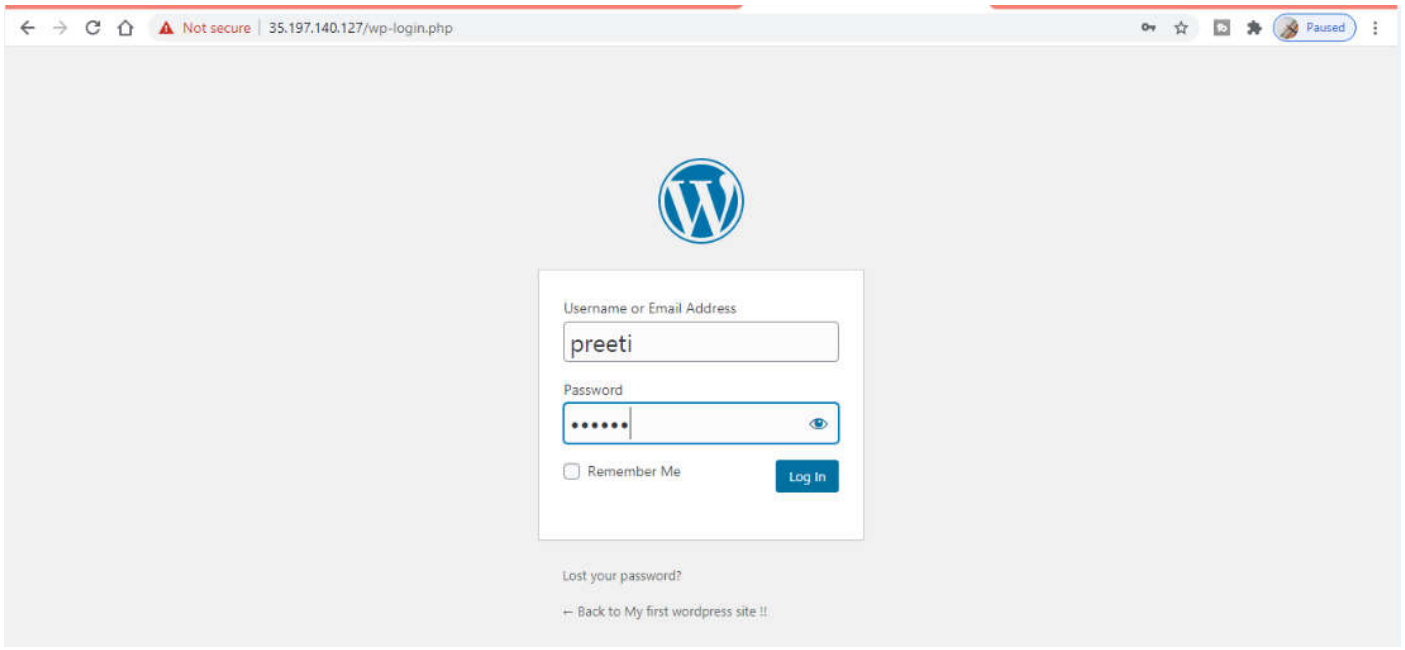

Not secure | 35.197.140.127/wp-admin/setup-config.php?step=1
Paused
Below you should enter your database connection details. If you're not sure about these, contact your host.
Database Name
mydb1
The name of the database you want to use with WordPress.
Username
preeti
Your database username.
Password
Your database password.
Database Host
104.196.156.215
You should be able to get this info from your web host, if localhost doesn't work.
Table Prefix
wp_
If you want to run multiple WordPress installations in a single database, change this.
Submit

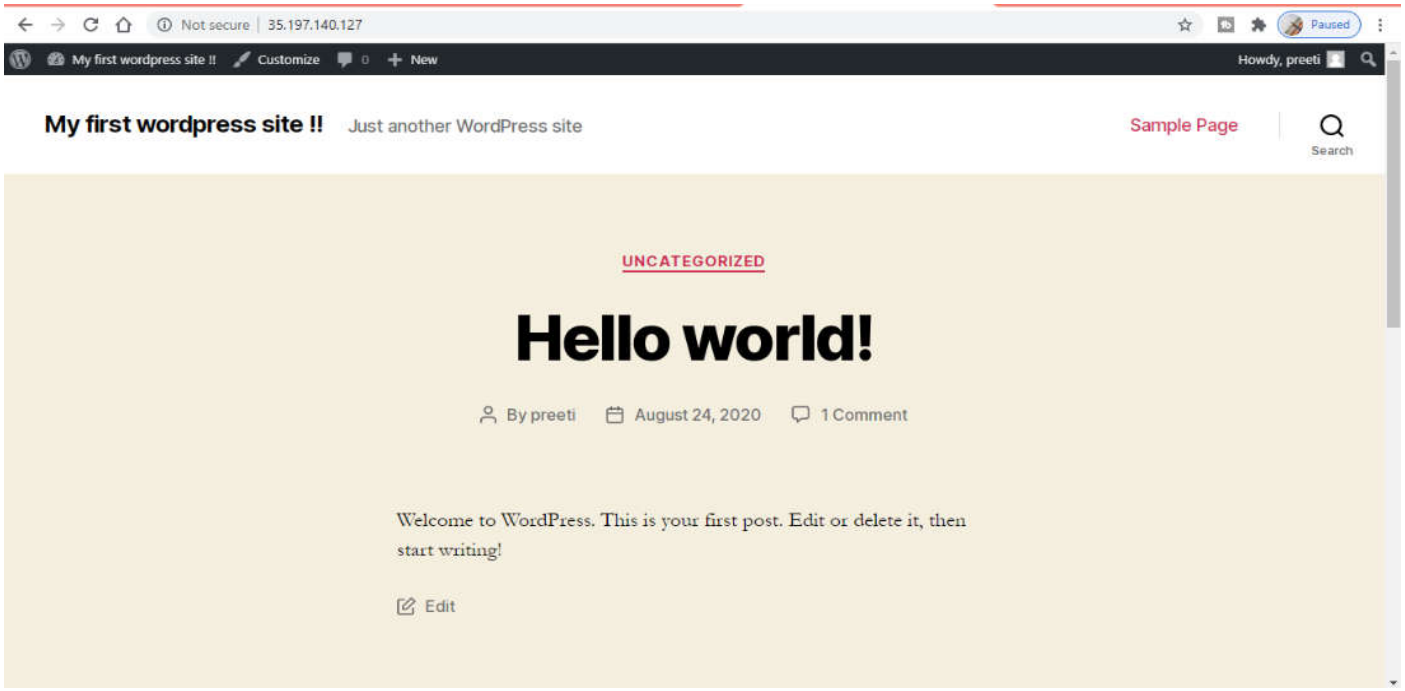

Not secure | 35.197.140.127/wp-admin/setup-config.php?step=2
Paused
All right, sparky! You've made it through this part of the installation. WordPress can now communicate with your database. If you are ready, time now to...
Run the installation


Not secure | 35.197.140.127/wp-admin/install.php?language=en_US
Paused
Information needed
Please provide the following information. Don't worry, you can always change these settings later.
Site Title
My first wordpress site !!
Username
preeti
Usernames can have only alphanumeric characters, spaces, underscores, hyphens, periods, and the @ symbol.
Password
Hide
Very weak
Important: You will need this password to log in. Please store it in a secure location.
Confirm Password
Confirm use of weak password
Your Email
preetishishodia702@gmail.com
Double-check your email address before continuing.
Search engine visibility
Discourage search engines from indexing this site
It is up to search engines to honor this request.
Install WordPress

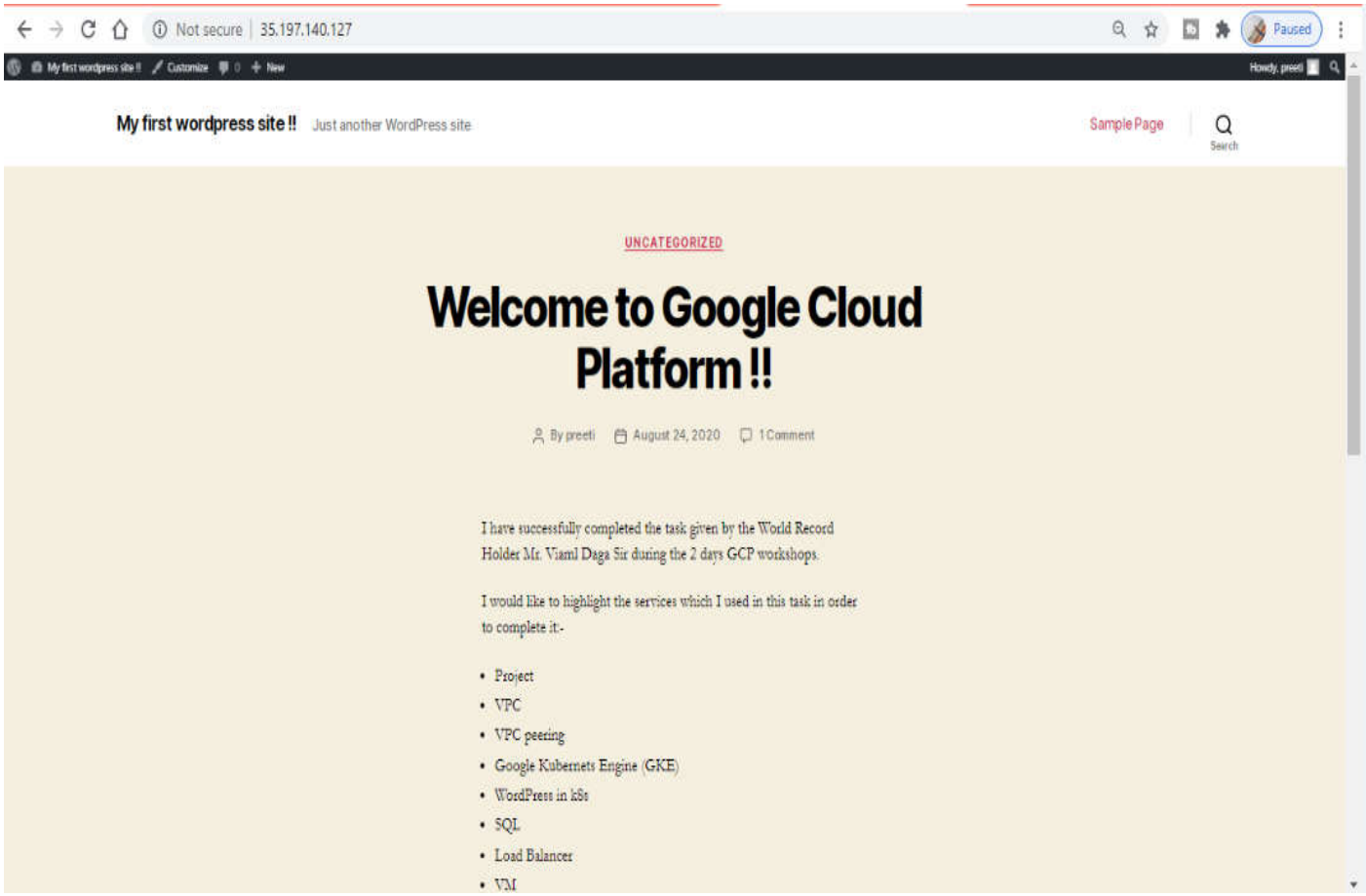


Now, login to wordpress site:-





Here, I successfully launched my wordpress site :-



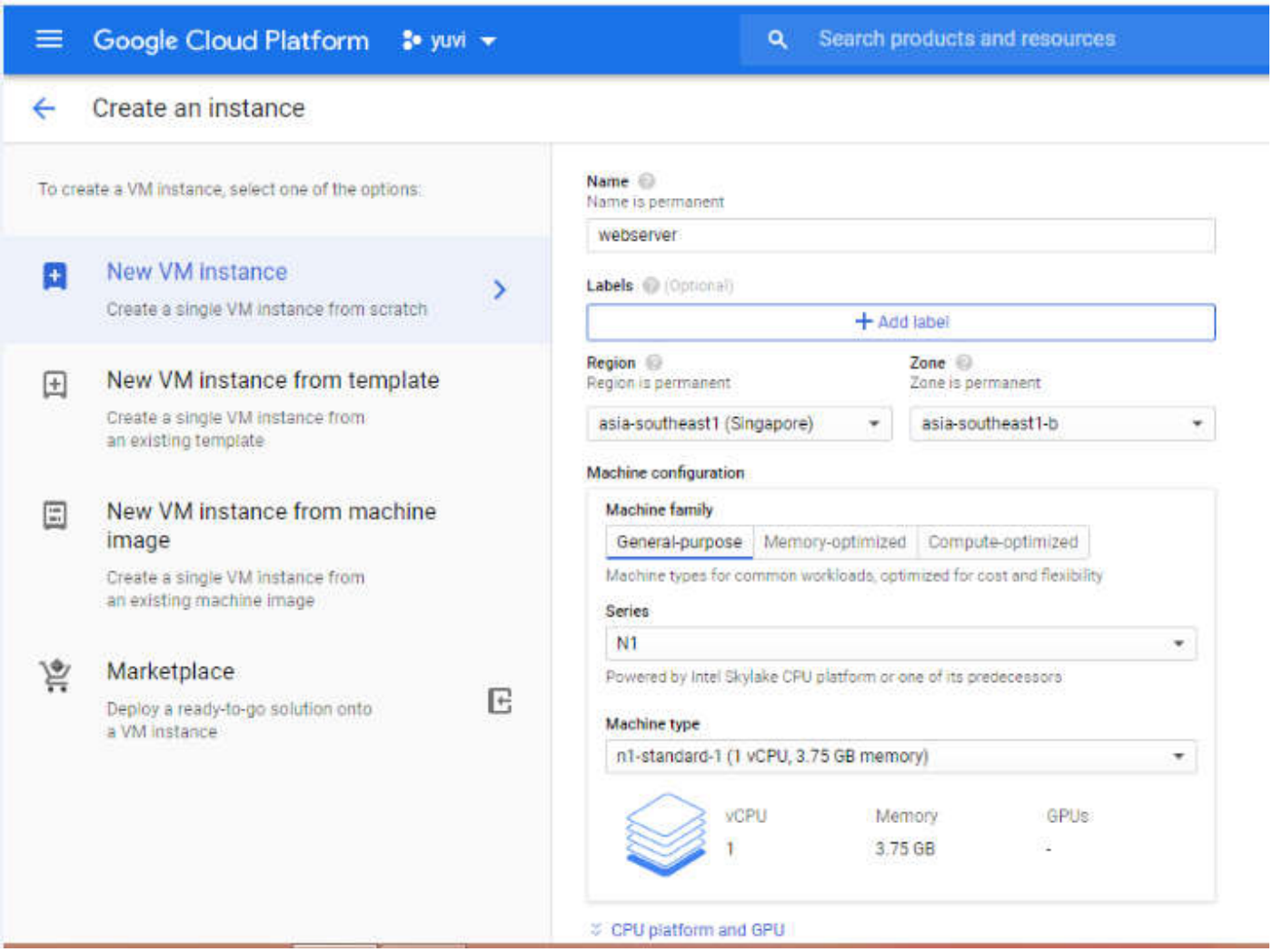
As soon as you connect your database to wordpress site, your database will automatically update :-

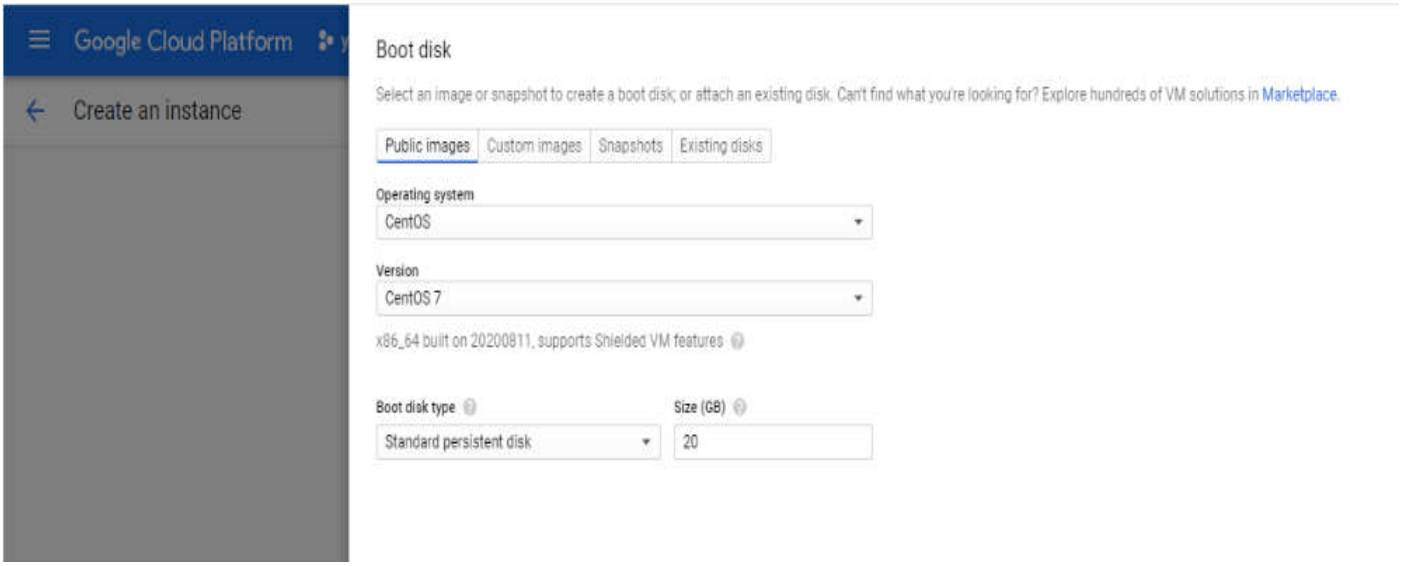
```
mysql> use mydb1
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> show tables;
+-----------------------+
| Tables_in_mydb1       |
+-----------------------+
| wp_commentmeta        |
| wp_comments           |
| wp_links              |
| wp_options            |
| wp_postmeta           |
| wp_posts              |
| wp_term_relationships |
| wp_term_taxonomy      |
| wp_termmeta           |
| wp_terms              |
| wp_usermeta           |
| wp_users              |
+-----------------------+
12 rows in set (0.22 sec)

mysql>
```

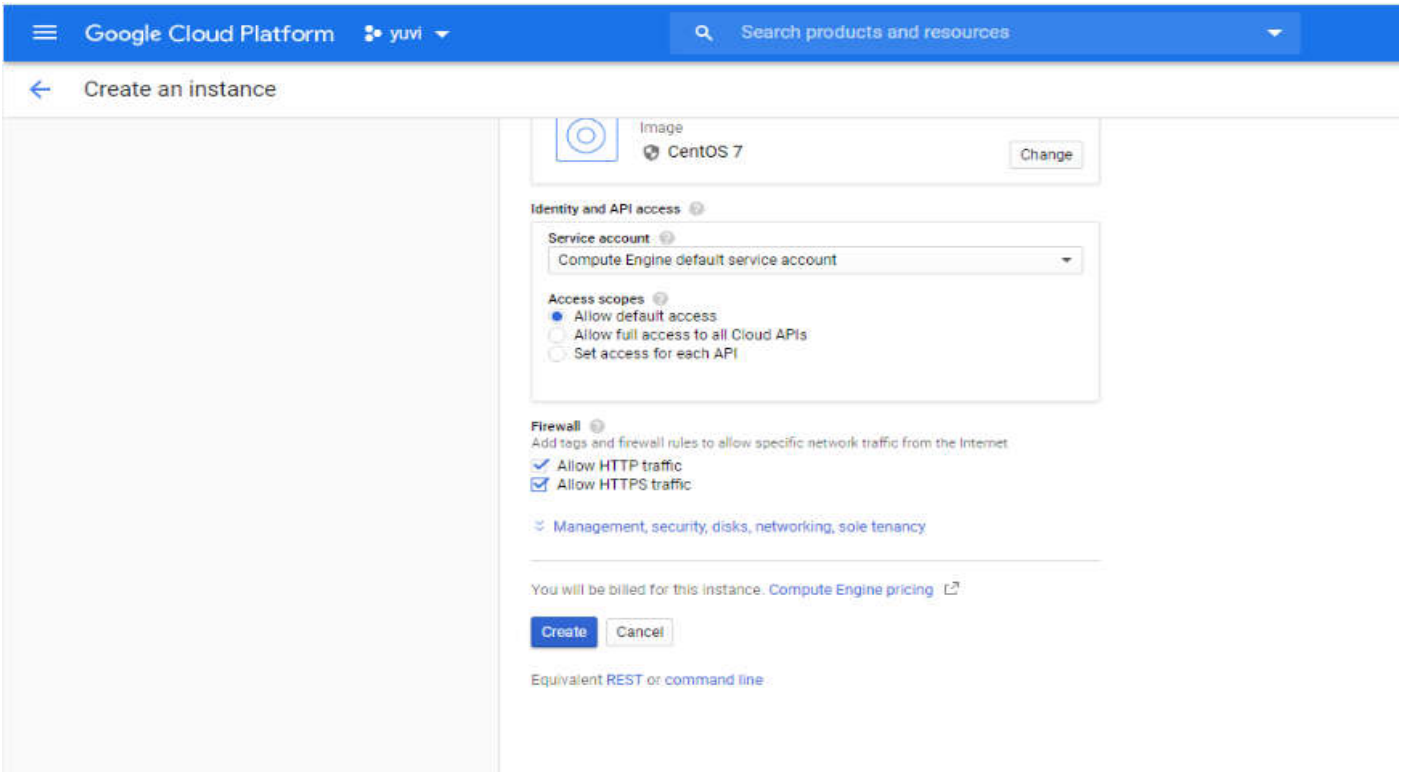
Here, I have successfully completed the task given by **Vimal Sir**.

Extra:-

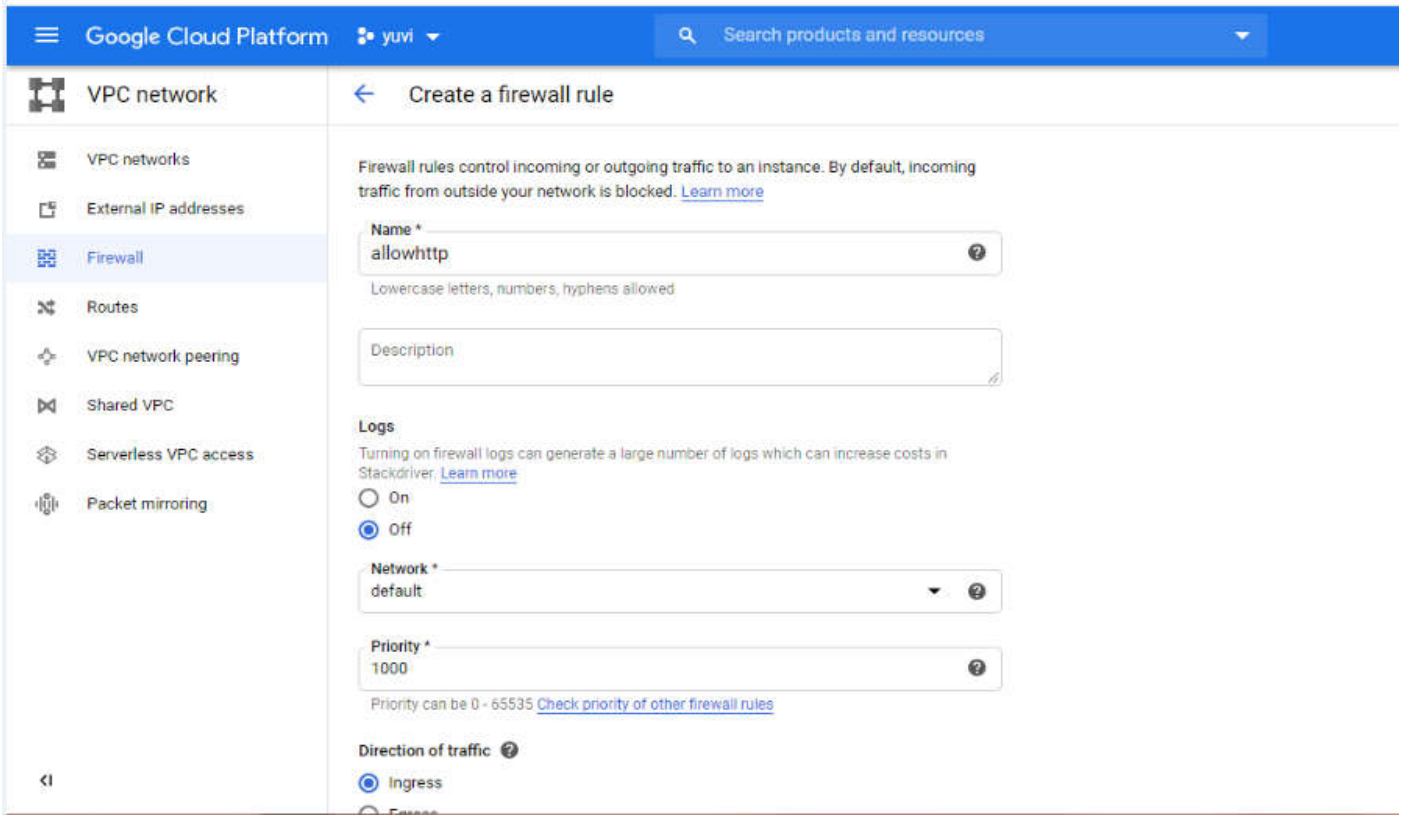
In addition to this task, I also launched one webserver

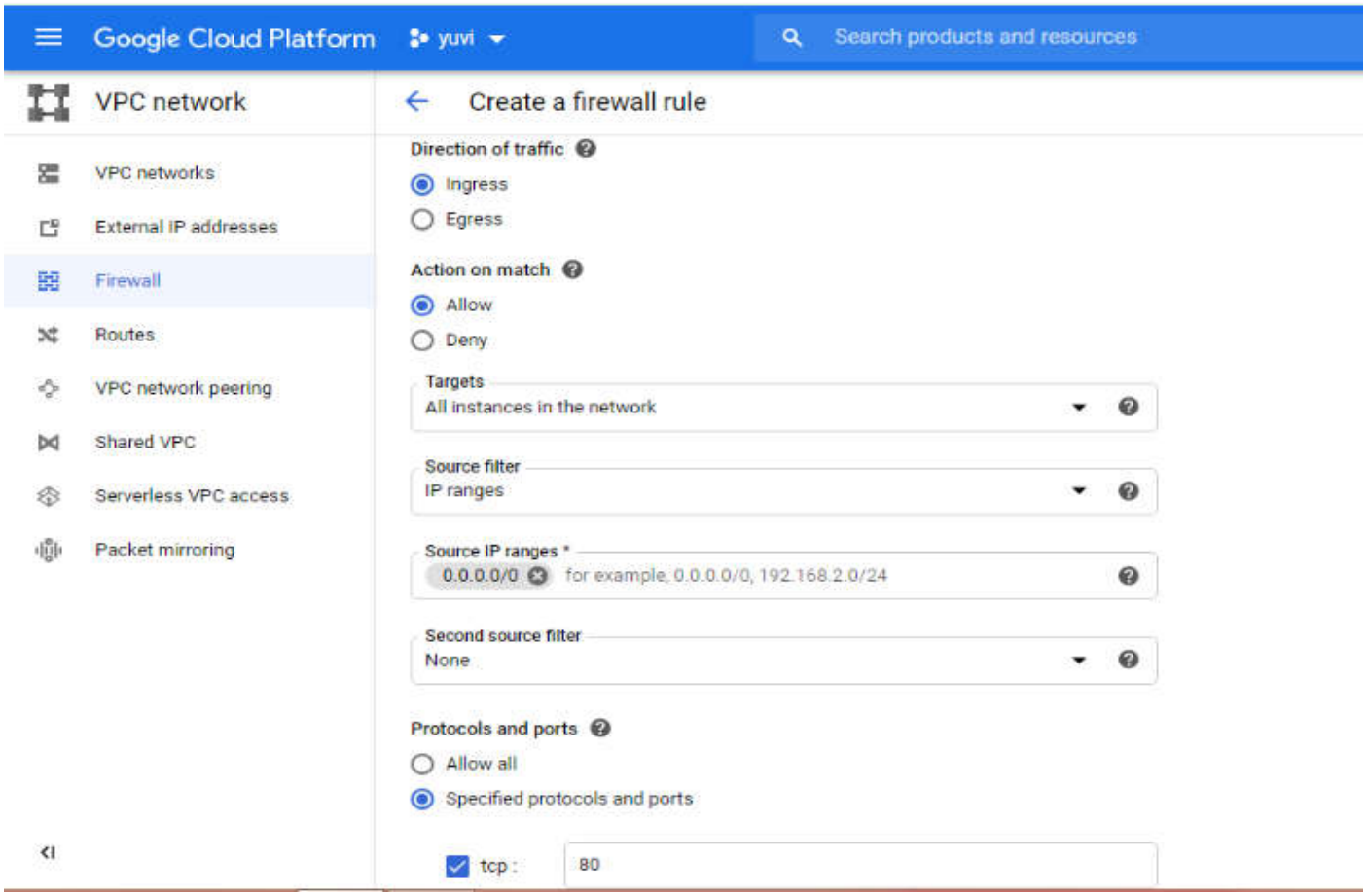


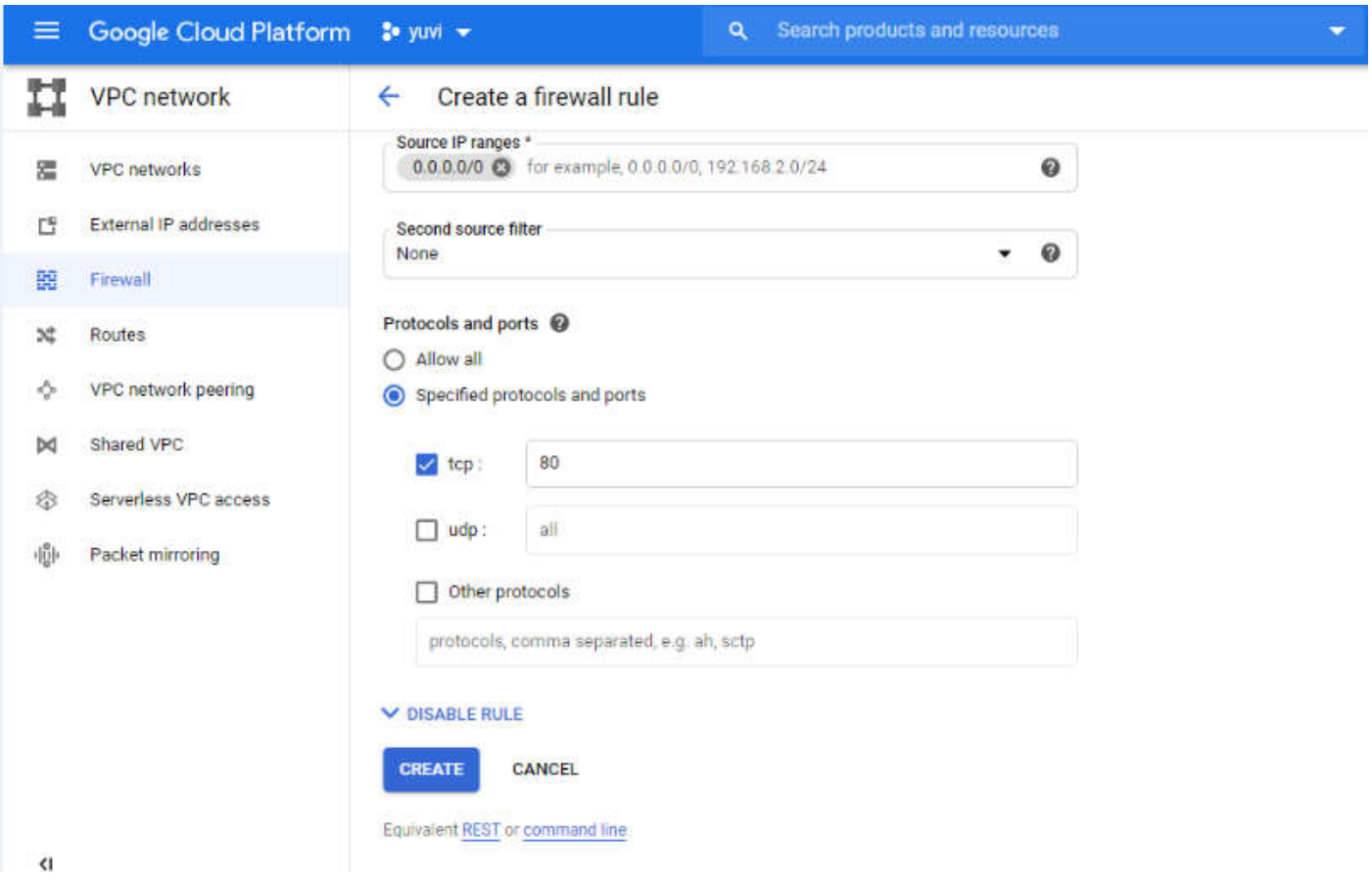




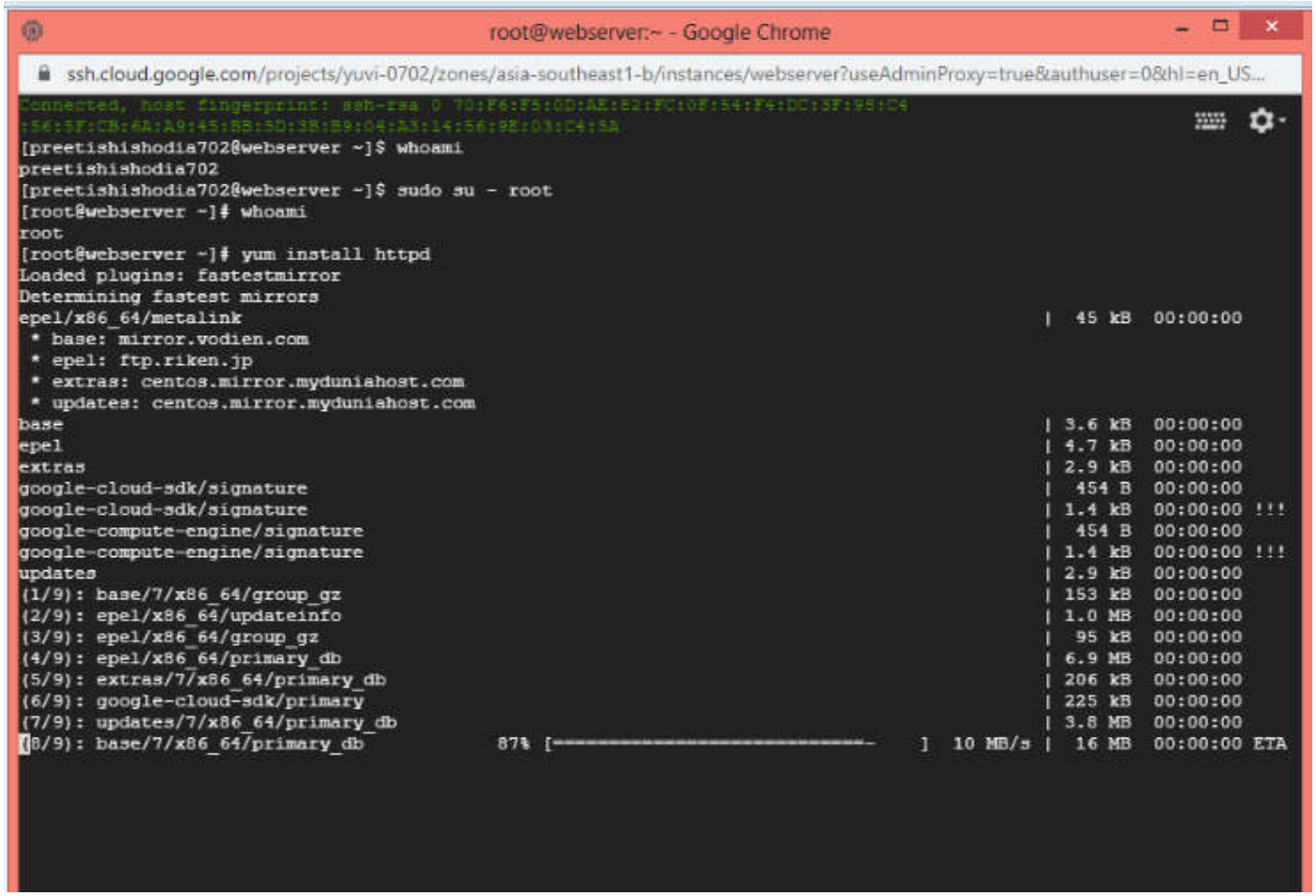
Create some firewall rules also :-

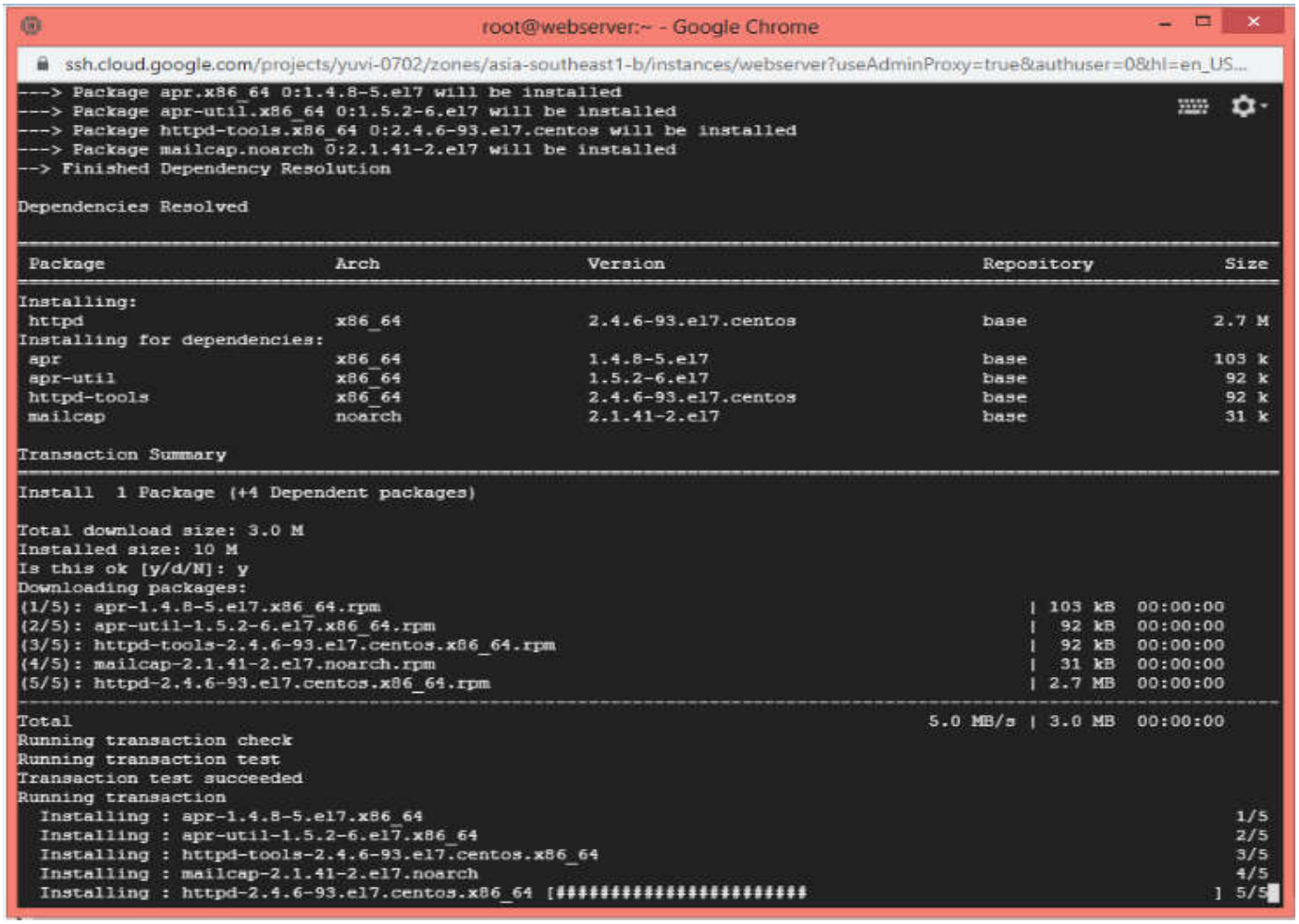


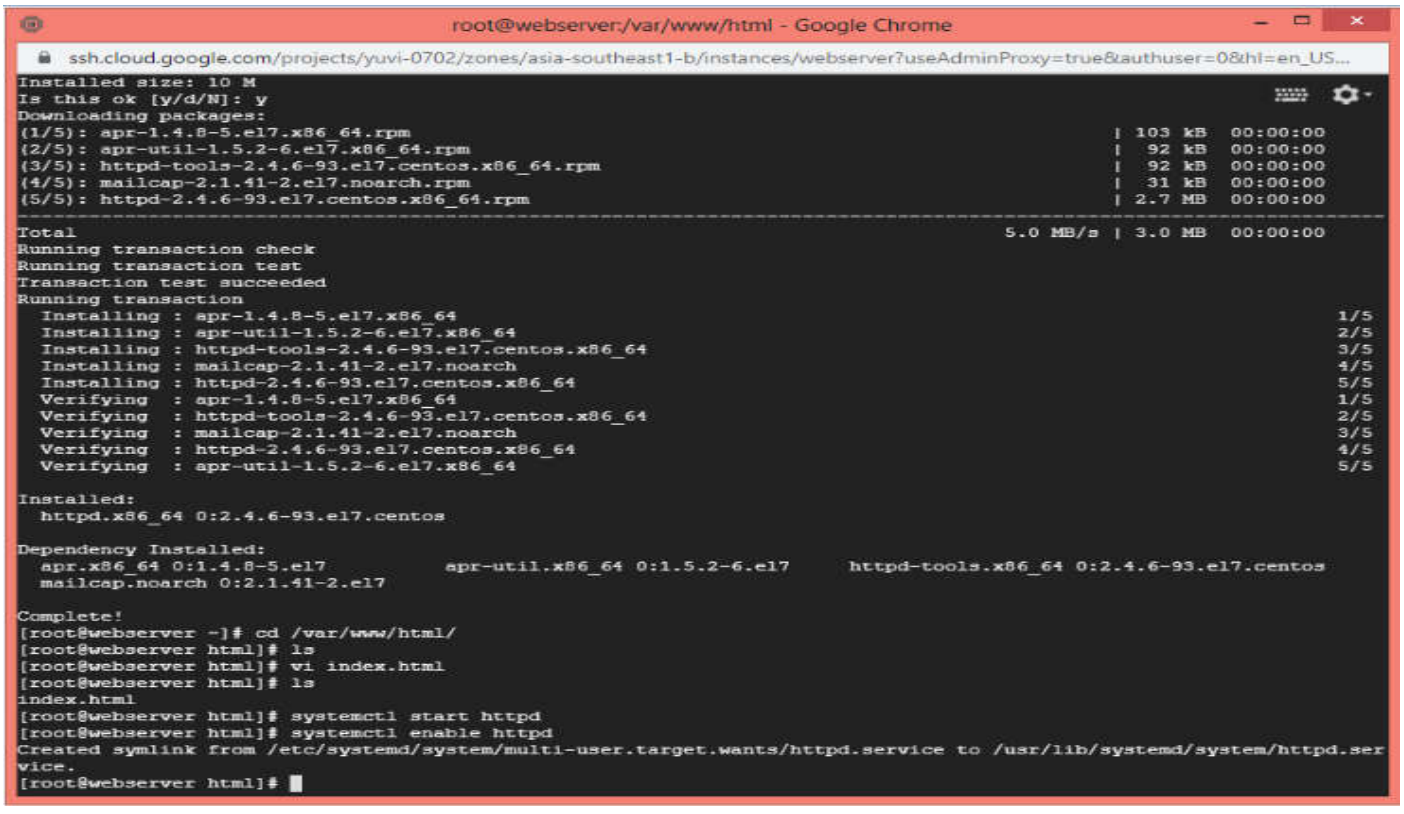

Google Cloud Platform
yuvi
Search products and resources
VPC network
VPC networks
External IP addresses
Firewall
Routes
VPC network peering
Shared VPC
Serverless VPC access
Packet mirroring
Create a firewall rule
Direction of traffic
Ingress
Egress
Action on match
Allow
Deny
Targets
All instances in the network
Source filter
IP ranges
Source IP ranges *
0.0.0.0/0
for example, 0.0.0.0/0, 192.168.2.0/24
Second source filter
None
Protocols and ports
Allow all
Specified protocols and ports
tcp :
80


Google Cloud Platform
yuvi
Search products and resources
VPC network
VPC networks
External IP addresses
Firewall
Routes
VPC network peering
Shared VPC
Serverless VPC access
Packet mirroring
Create a firewall rule
Source IP ranges *
0.0.0.0/0
for example, 0.0.0.0/0, 192.168.2.0/24
Second source filter
None
Protocols and ports
Allow all
Specified protocols and ports
tcp :
80
udp :
all
Other protocols
protocols, comma separated, e.g. ah, sctp
DISABLE RULE
CREATE
CANCEL
Equivalent REST or command line

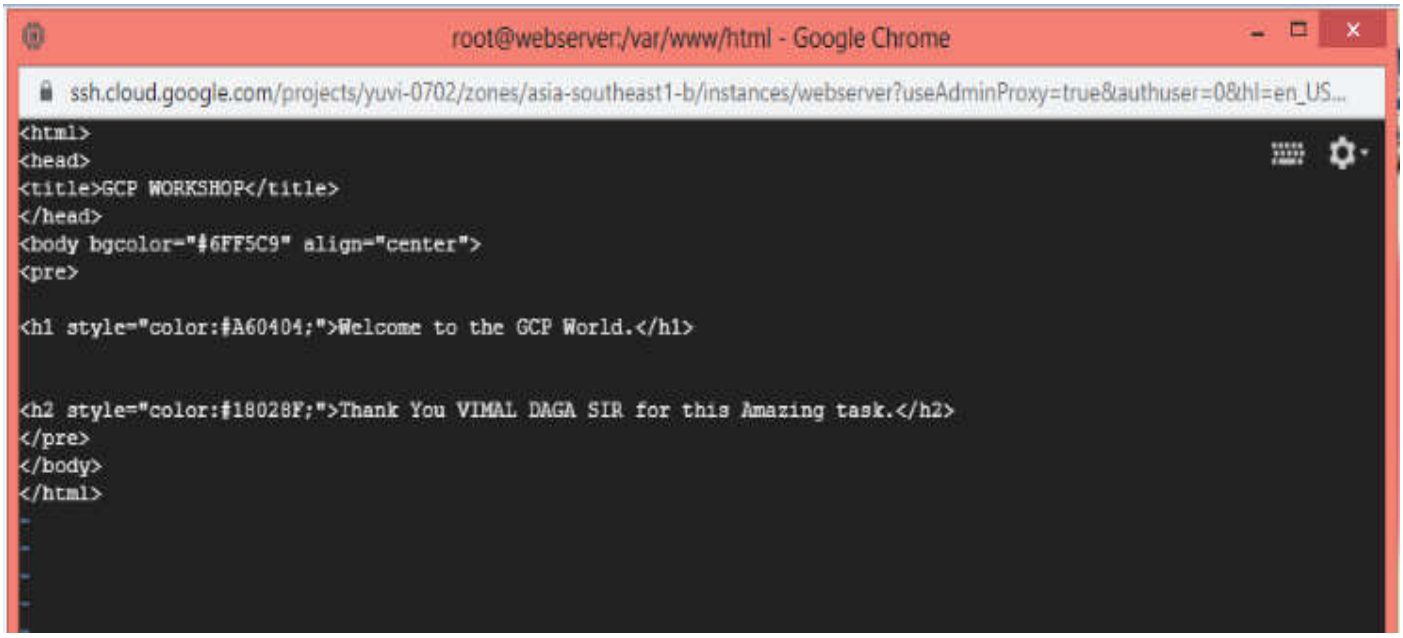
VM (webserver) is launched successfully :-



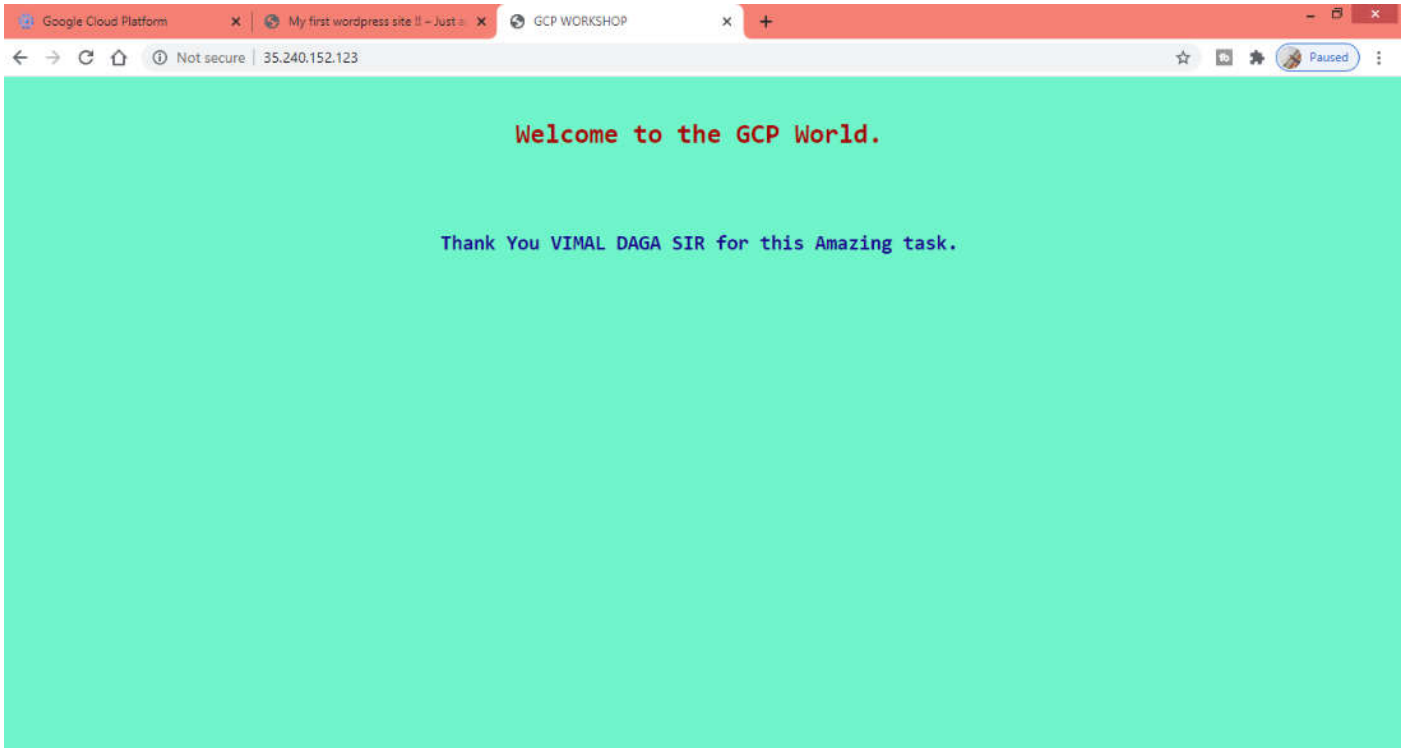

root@webserver:~ - Google Chrome
ssh.cloud.google.com/projects/yuvi-0702/zones/asia-southeast1-b/instances/webserver?useAdminProxy=true&authuser=0&hl=en_US...
---> Package apr.x86_64 0:1.4.8-5.el7 will be installed
---> Package apr-util.x86_64 0:1.5.2-6.el7 will be installed
---> Package httpd-tools.x86_64 0:2.4.6-93.el7.centos will be installed
---> Package mailcap.noarch 0:2.1.41-2.el7 will be installed
--> Finished Dependency Resolution
Dependencies Resolved
Package Arch Version Repository Size
Installing:
httpd x86_64 2.4.6-93.el7.centos base 2.7 M
Installing for dependencies:
apr x86_64 1.4.8-5.el7 base 103 k
apr-util x86_64 1.5.2-6.el7 base 92 k
httpd-tools x86_64 2.4.6-93.el7.centos base 92 k
mailcap noarch 2.1.41-2.el7 base 31 k
Transaction Summary
Install 1 Package (+4 Dependent packages)
Total download size: 3.0 M
Installed size: 10 M
Is this ok [y/d/N]: y
Downloading packages:
(1/5): apr-1.4.8-5.el7.x86_64.rpm | 103 kB 00:00:00
(2/5): apr-util-1.5.2-6.el7.x86_64.rpm | 92 kB 00:00:00
(3/5): httpd-tools-2.4.6-93.el7.centos.x86_64.rpm | 92 kB 00:00:00
(4/5): mailcap-2.1.41-2.el7.noarch.rpm | 31 kB 00:00:00
(5/5): httpd-2.4.6-93.el7.centos.x86_64.rpm | 2.7 MB 00:00:00
Total 5.0 MB/s | 3.0 MB 00:00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Installing : apr-1.4.8-5.el7.x86_64 1/5
Installing : apr-util-1.5.2-6.el7.x86_64 2/5
Installing : httpd-tools-2.4.6-93.el7.centos.x86_64 3/5
Installing : mailcap-2.1.41-2.el7.noarch 4/5
Installing : httpd-2.4.6-93.el7.centos.x86_64 [########################] 5/5


root@webserver:/var/www/html - Google Chrome
ssh.cloud.google.com/projects/yuvi-0702/zones/asia-southeast1-b/instances/webserver?useAdminProxy=true&authuser=0&hl=en_US...
Installed size: 10 M
Is this ok [y/d/N]: y
Downloading packages:
(1/5): apr-1.4.8-5.el7.x86_64.rpm | 103 kB 00:00:00
(2/5): apr-util-1.5.2-6.el7.x86_64.rpm | 92 kB 00:00:00
(3/5): httpd-tools-2.4.6-93.el7.centos.x86_64.rpm | 92 kB 00:00:00
(4/5): mailcap-2.1.41-2.el7.noarch.rpm | 31 kB 00:00:00
(5/5): httpd-2.4.6-93.el7.centos.x86_64.rpm | 2.7 MB 00:00:00
Total 5.0 MB/s | 3.0 MB 00:00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Installing : apr-1.4.8-5.el7.x86_64 1/5
Installing : apr-util-1.5.2-6.el7.x86_64 2/5
Installing : httpd-tools-2.4.6-93.el7.centos.x86_64 3/5
Installing : mailcap-2.1.41-2.el7.noarch 4/5
Installing : httpd-2.4.6-93.el7.centos.x86_64 5/5
Verifying : apr-1.4.8-5.el7.x86_64 1/5
Verifying : httpd-tools-2.4.6-93.el7.centos.x86_64 2/5
Verifying : mailcap-2.1.41-2.el7.noarch 3/5
Verifying : httpd-2.4.6-93.el7.centos.x86_64 4/5
Verifying : apr-util-1.5.2-6.el7.x86_64 5/5
Installed:
httpd.x86_64 0:2.4.6-93.el7.centos
Dependency Installed:
apr.x86_64 0:1.4.8-5.el7 apr-util.x86_64 0:1.5.2-6.el7 httpd-tools.x86_64 0:2.4.6-93.el7.centos
mailcap.noarch 0:2.1.41-2.el7
Complete!
[root@webserver ~]# cd /var/www/html/
[root@webserver html]# ls
[root@webserver html]# vi index.html
[root@webserver html]# ls
index.html
[root@webserver html]# systemctl start httpd
[root@webserver html]# systemctl enable httpd
Created symlink from /etc/systemd/system/multi-user.target.wants/httpd.service to /usr/lib/systemd/system/httpd.service.
[root@webserver html]#

Html code :-



This site is working fine :-



THANK YOU !!