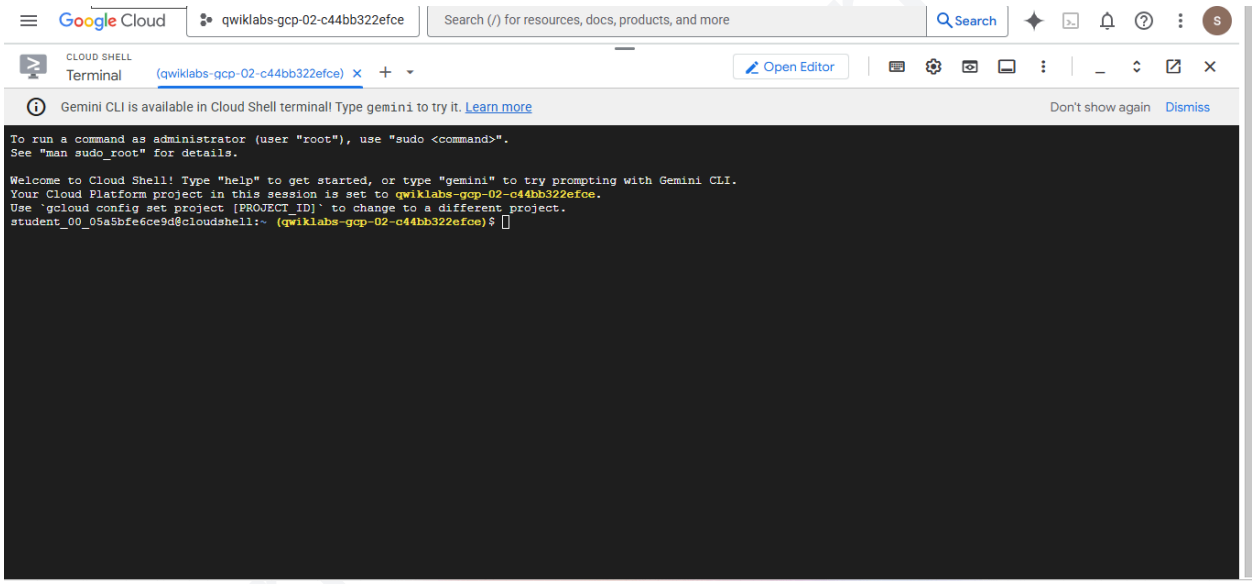
Creation of a Virtual Private Cloud (VPC) using Google Cloud Shell

Project Overview: This report details the process of creating VPC Networks and subnets in Google Cloud Platform (GCP) using Google Cloud Shell.

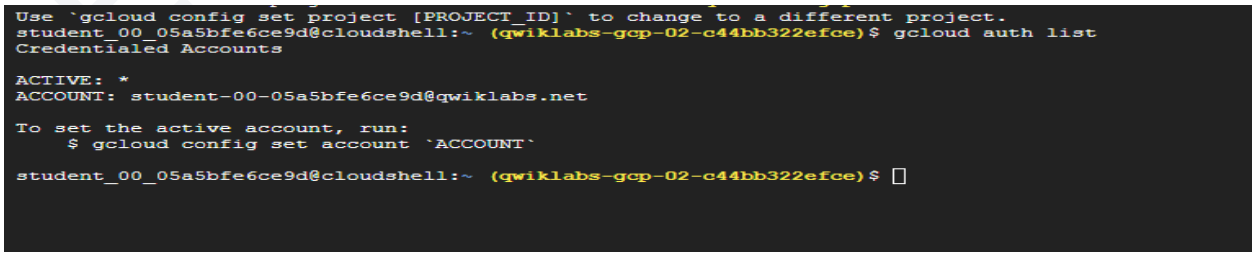
What is a VPC? A Virtual Private Cloud (VPC) is a virtual network within a public cloud environment, such as GCP, that is dedicated to a single customer. It provides a logically isolated section of the cloud where users can launch cloud resources, like virtual machines (VMs), in a virtual network they define.

The Google Cloud Console



The Auth list Confirmation

The command **(gcloud auth list)** is used to confirm who you are logged in as by listing all of the available accounts and highlighting the one executing the command



The Project List Confirmation

The command **(gcloud config list project)** is used to get an overview of what project you have on Google Cloud, its local settings, and its status

```
student_00_05a5bfe6ce9d@cloudshell:~ (qwiklabs-gcp-02-c44bb322efce)$ gcloud config list project
[core]
project = qwiklabs-gcp-02-c44bb322efce

Your active configuration is: [cloudshell-20757]
student_00_05a5bfe6ce9d@cloudshell:~ (qwiklabs-gcp-02-c44bb322efce)$
```

Custom VPC Network Creation

The command **(gcloud compute networks create labnet --subnet-mode=custom)** is used to create a VPC network named labnet that is to run under the custom mode (meaning it gives full control over the design of the network)

When creating a VPC network in GCP, there are two modes that a VPC network could be, and they are auto(GCP creates the subnets for you) and custom(you determine your subnet creation and have full control)

Command breakdown

gcloud: This command would activate the cloud SDK **gcloud** command line tool

compute: This is one command option available in gcloud, and it is used to create and configure the Compute Engine resources

networks: This is a subcommand of **“compute”** and it allows us to modify the Compute Engine networks settings

create: This command is used to create a network on the Compute Engine networks

labnet: The name of the network being created

--subnet-mode=custom: This is used to specify to GCP that we are not using the auto mode, where GCP would create the subnets, but rather the custom mode that would allow us to create our own subnets

```
student_00_05a5bfe6ce9d@cloudshell:~ (qwiklabs-gcp-02-c44bb322efce)$ gcloud compute networks create labnet2 --subnet-mode=custom
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-02-c44bb322efce/global/networks/labnet2].
NAME: labnet2
SUBNET_MODE: CUSTOM
BGP_ROUTING_MODE: REGIONAL
IPV4_RANGE:
GATEWAY_IPV4:
INTERNAL_IPV6_RANGE:

Instances on this network will not be reachable until firewall rules
are created. As an example, you can allow all internal traffic between
instances as well as SSH, RDP, and ICMP by running:

$ gcloud compute firewall-rules create <FIREWALL_NAME> --network labnet2 --allow tcp,udp,icmp --source-ranges <IP_RANGE>
$ gcloud compute firewall-rules create <FIREWALL_NAME> --network labnet2 --allow tcp:22,tcp:3389,icmp
```

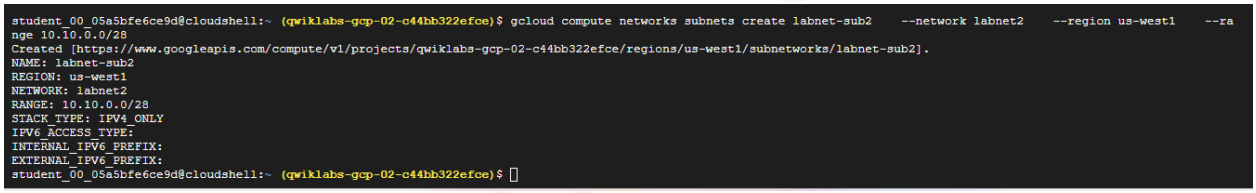
Subnet Creation

The command **(gcloud compute networks subnets create labnet-sub --network labnet --region us-west1 --range 10.0.0.0/28)** is used to create a subnet named labnet-sub under the labnet networks with the following details of the region being in the us-west 1 and the IP range being 10.0.0.0/28

The **subnets** command is a subcommand under the networks command that is used to modify subnet properties

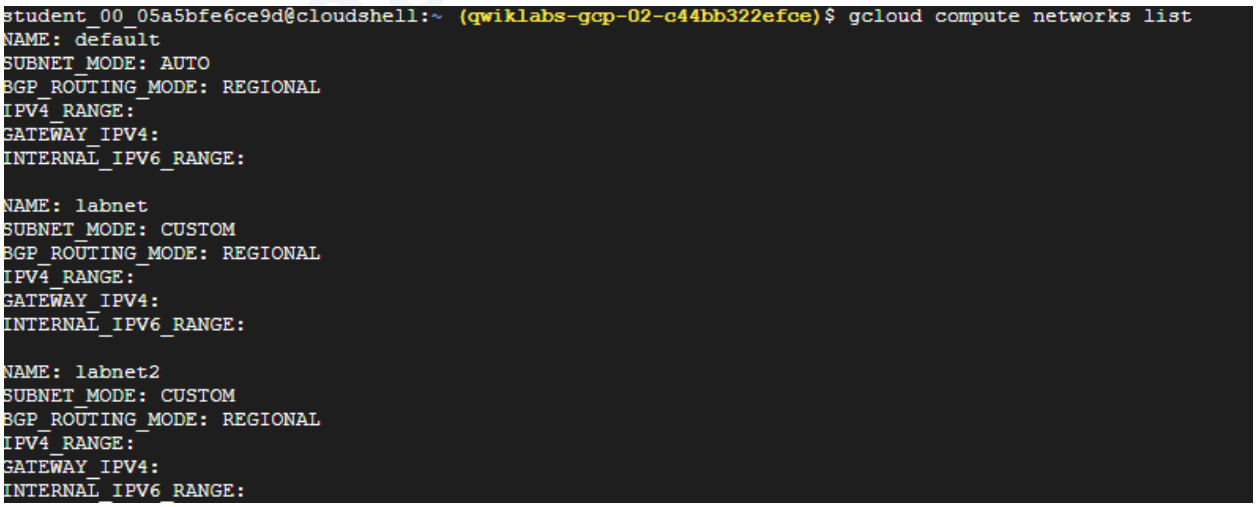
Important Note:

1. A subnet name must be unique in the Project for a region, even across networks
2. The same subnet can appear twice in a Project (Project == Entire cloud design)as long as each one is in a different region
3. Each subnet must have a primary IP address range, which is unique within the same region in a Project



Verification of network creation

The command **(gcloud compute networks list)** is used to output the list of all networks created, and by default, a default network is created with the project



Verification of Subnet Creation

The command **(gcloud compute networks subnet list --network=labnet)** is used to output the list of subnets created under the network labnet