Assignment 2, Cloud Computing

- Title of the assignment - Exploring Google Cloud Services
- Student's name - Sabiyeva Akmaral
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Introduction

The goal of this assignment is to gain hands-on experience with Google Cloud services, specifically focusing on virtual machines, storage solutions, and networking. Students will set up and configure different services within Google Cloud and document their findings.

1. Virtual Machines in Google Cloud

- Create a Virtual Machine (VM) Instance

  The first step is to go to my project, then choose Compute engine- >VM instance on the navigation panel. Then I click to create the instance as “my-server-akma” then write the name,zone ,machine type,OS and configure firewall settings.

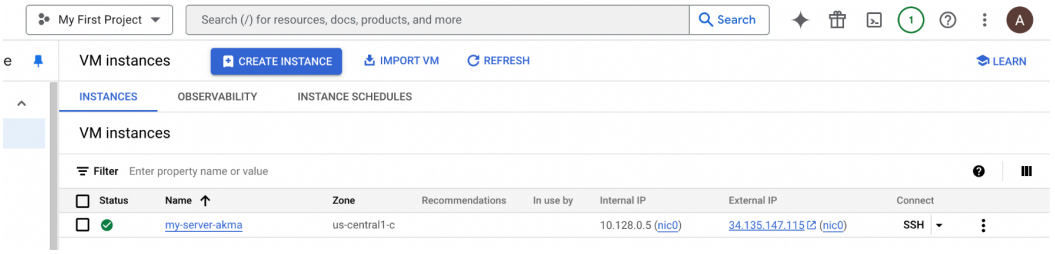


Fig 1.

- Connect to the VM

  After that I connect to SSH clicking “SSH” button,and write some commands.For example,

-whoami to see my username

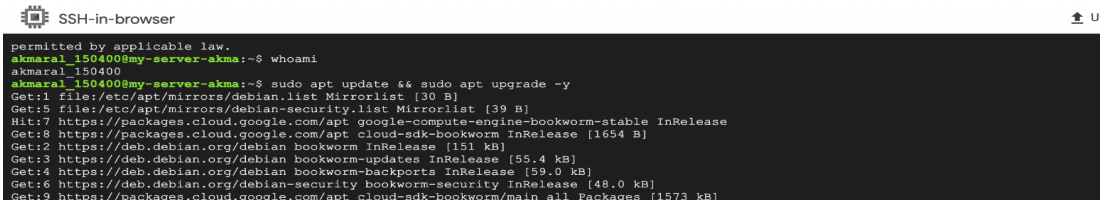


Fig 2.

To install nginx and apache -sudo apt install apache2 -y -sudo apt install nginx -y

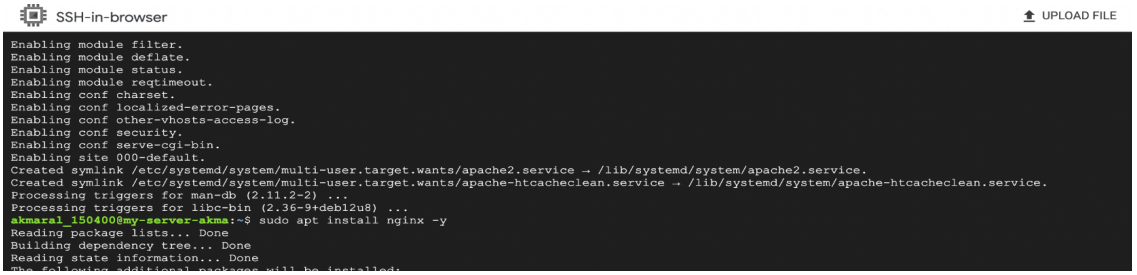


Fig 3.

To start and enable the service
-sudo systemctl start apache2
-sudo systemctl enable apache2
-sudo systemctl start nginx
-sudo systemctl enable nginx

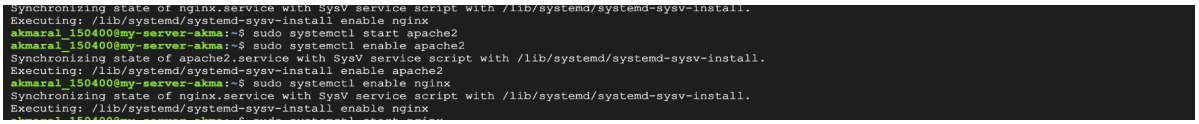


Fig 4.

Then I create an html file, to see the correctness i check with external IP and see my html file.It's work!

Welcome to My Web Server

Fig 5.

- Document the Process

Bridged and Host-only were used with Allowed HTTP/HTTPS traffic to serve the Web Content and SSH traffic to manage the VM.As an HTTP server, installed Apache (or Nginx) which is quite easy to use,consumes fewer resources and is suitable for running small websites or test pages.

2. Storage Solutions in Google Cloud

- Create a Cloud Storage Bucket

Firstly, I go to In the left-hand navigation panel, go to Cloud Storage → Bucket.I selected the name “bucket-as15”,region,uniform and public settings.Then I uploaded jpg.

Fig 6.

- Implement Object Lifecycle Management

  In my bucket, I click the lifecycle tab,then create a rule to delete an image after 30+ days and delete a file created before 10th october.

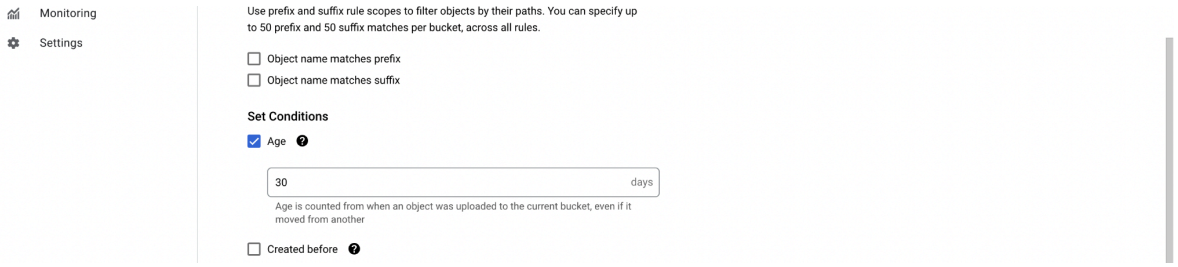


Fig 7.

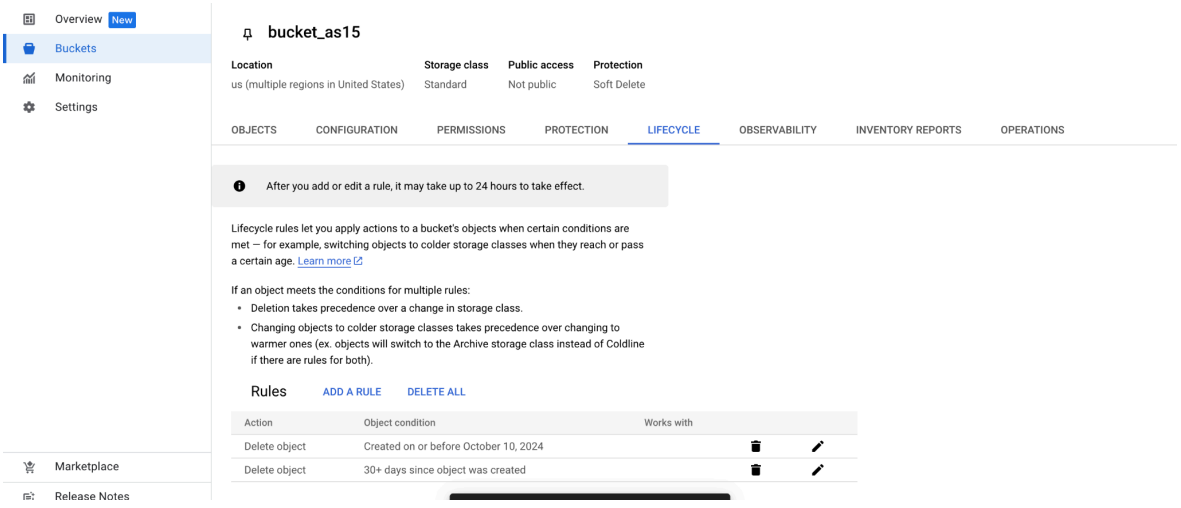


Fig 8.

- Document the Process

If you have old files that you no longer require, auto-deleting will help save valuable storage space because you can set a time limit on objects and they will be deleted automatically.In one’s environment it is common to work with voluminous datasets, lifecycle rules lower the number of inputs many individuals have to provide.

3. Networking in Google Cloud

- Set Up a Virtual Private Cloud (VPC)

  I click the left-hand menu, go to VPC Network → VPC Networks. Click Create VPC Network to begin setting up a new VPC. I create vpc as my-custom-as-15. I choose a Subnet then specify a region and set an IP range 10.0.0.0/24.

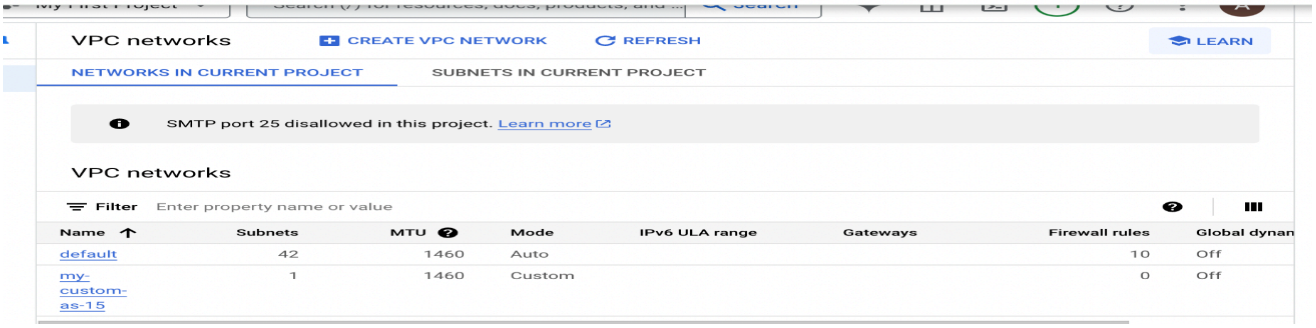


Fig 9.

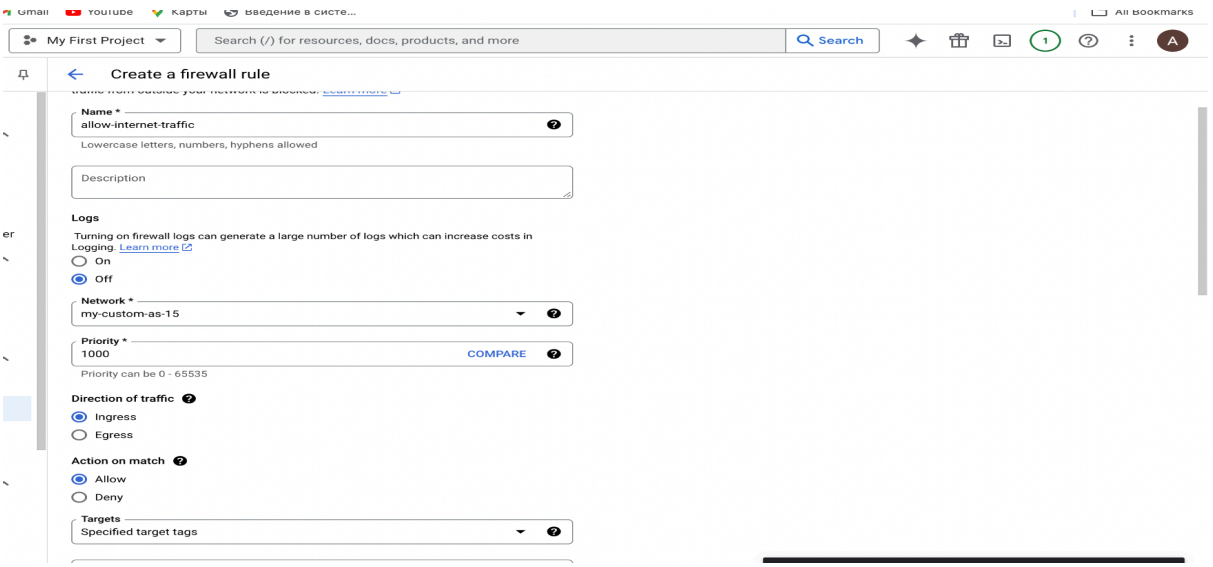
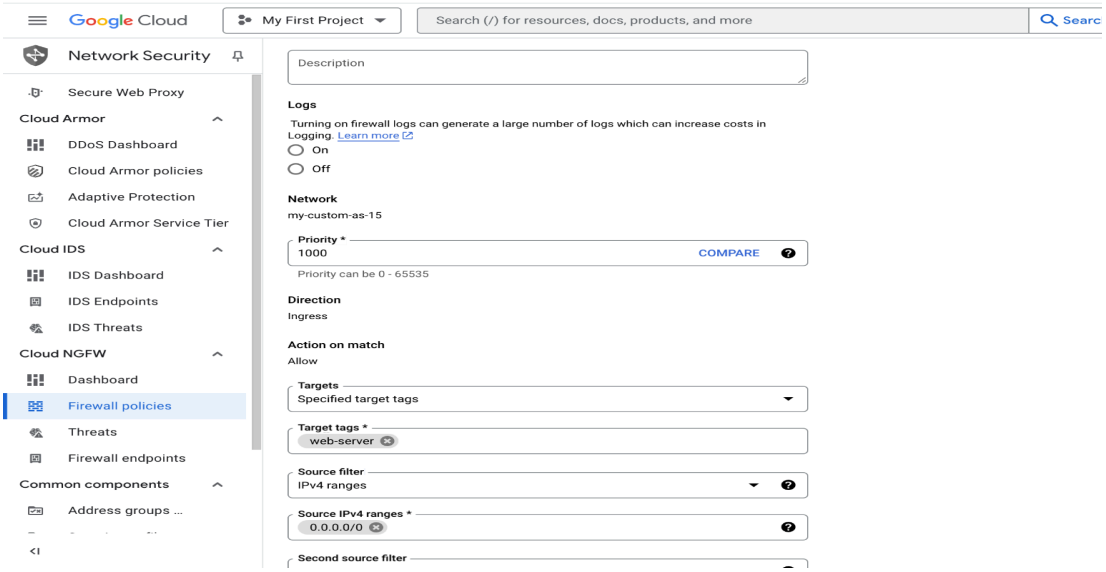


Fig 10.

On a VPC network go to the firewall, then create a rule “allow-internet-traffic”,complete all fields as targets,IPV4 ranges.



- Connect VM to VPC

Fig 11.

I click to SSH, then type -ping 8.8.8.8. This tests whether a VM has outbound access to the internet, I see the responses.

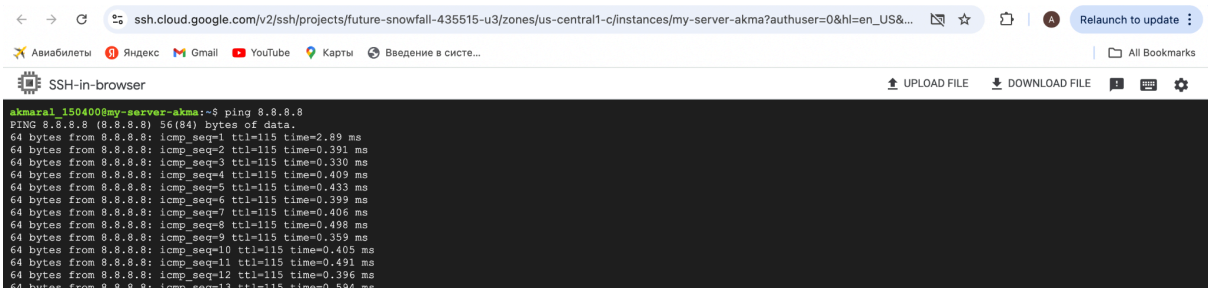


Fig 12.

Conclusion

When attaching your VM to VPC and routing tentative ping to an external server, you check that your VM has the right network settings, and, therefore, the VPC configuration, as well as firewall rules, are correct. This makes access to cloud resources through managed and secure networks possible.

References

1. **Google Cloud Documentation - VPC Overview**:

   This is the main reference for understanding and setting up VPCs in Google Cloud. It covers creating VPC networks, subnets, and configuring firewall rules.

Available at: https://cloud.google.com/vpc/docs/overview

2. **Google Cloud Documentation - Creating and Managing Firewall Rules**:

   This document provides detailed instructions on how to create and manage firewall rules in Google Cloud, including allowing or restricting traffic between VMs and the internet.

   Available at: https://cloud.google.com/vpc/docs/firewalls

3. **Google Cloud Documentation - Connecting to Instances Using SSH**:

   Guidance on how to connect to a VM instance using SSH from the Google Cloud Console.

   Available at: https://cloud.google.com/compute/docs/instances/connecting-advanced

4. **Google Cloud Documentation - Testing Network Connectivity**:

   This document covers steps on testing network connectivity from your VM to external resources, including using ping.

   Available at: https://cloud.google.com/network-connectivity/docs/concepts/overview