

Assignment 2 - Creating and deploying Photo Album and Photo Uploader website on a basic AWS infrastructure

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Tutorial Class: Class 1-11 Friday,
2:30 PM – 4:30 PM at BA407

I. INTRODUCTION

In this initiative, fundamental AWS frameworks and resources were utilized to launch the Photo Album and Photo Uploader Website. All essential recommendations from the AWS Academy were incorporated during the rollout, leading to a successful deployment.

II. PHOTO ALBUM & PHOTO UPLOADER

The Photo Album website is hosted live on AWS's "DevServer" EC2 instance and accessible via an Elastic IP. Images are uploaded through a user-friendly interface and stored in the "ntanjumbucket" S3 bucket, while associated textual data is saved in the "ntanjumdb" AWS RDS. The PHP-based site allows for seamless photo uploading and retrieval, providing an organized and efficient user experience.

URL: <http://18.204.92.58/photoalbum/album.php>

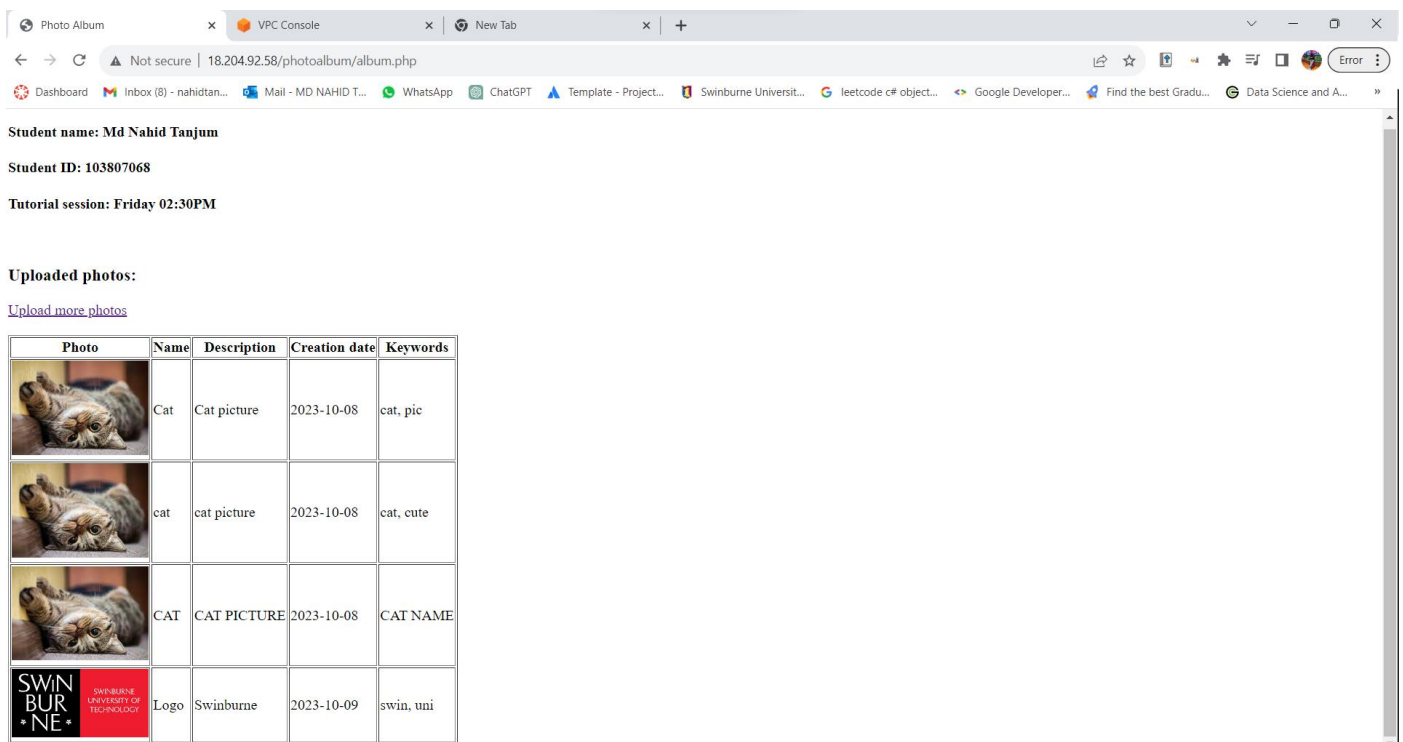


Figure 1 – Photo Album Web Page

Photo Album VPC Console New Tab

Not secure | 18.204.92.58/photoalbum/photouploader.php

Dashboard Inbox (8) - nahidtan... Mail - MD NAHID T... WhatsApp ChatGPT Template - Project... Swinburne Universit... leetcode c# object...

Photo uploader

Photo title:

Select a photo (Select PNG file for best result): No file chosen

Description:

Date:

Keywords (comma-delimited, e.g. keyword1, keyword2, ...):

[Photo Album](#)

Figure 2 – Photo Uploader Web Page

III. DATA RECORDS IN THE DATABASE

The RDS data has been managed using phpMyAdmin. According to the deployment's requirements, the data has been recorded.

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phpMyAdmin

Recent Favorites

- New
- information_schema
- mysql
- performance_schema
- photoalbum
 - New
 - photo_metadata
- sys

Server: ntanjumdb.cjxv83podg.us-east-1.rds.amazonaws.com Database: photoalbum Table: photo_metadata

Browse Structure SQL Search Insert Export Import Privileges Operations Triggers

⚠ Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 3 (4 total. Query took 0.0008 seconds)

SELECT * FROM `photo_metadata`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

title	description	creationdate	keywords	reference
Cat	Cat picture	2023-10-08	cat, pic	https://ntanjumbucket.s3.amazonaws.com/download.pn...
cat	cat picture	2023-10-08	cat, cute	https://ntanjumbucket.s3.amazonaws.com/download.pn...
CAT	CAT PICTURE	2023-10-08	CAT NAME	https://ntanjumbucket.s3.amazonaws.com/download.pn...
Logo	Swinburne	2023-10-09	swin, uni	https://ntanjumbucket.s3.amazonaws.com/images (1)...

Show all Number of rows: 25 Filter rows: Search this table

Query results operations

Print Copy to clipboard Export Display chart Create view

Figure 3 – Database Records

IV. ICMP CONNECTIVITY THROUGH SSH

Through the Linux console, the ICMP connectivity has been tested from the "DevServer." The keypair connected to the "DevServer instance" has been used to access the Linux terminal through the SSH(22) protocol.

```
ec2-user@ip-10-0-2-149:~  
login as: ec2-user  
Authenticating with public key "NTanjung"  
Last login: Sun Oct  8 06:33:58 2023 from 120.21.26.234  
#  
~\##### Amazon Linux 2  
~~\#####\  
~~\###| AL2 End of Life is 2025-06-30.  
~~\#/  
~~V~'-'->  
~~~  
~~.-.  
~~-/ /- /  
_/_/'-' /  
/m/'-' /  
A newer version of Amazon Linux is available!  
Amazon Linux 2023, GA and supported until 2028-03-15.  
https://aws.amazon.com/linux/amazon-linux-2023/  
19 package(s) needed for security, out of 24 available  
Run "sudo yum update" to apply all updates.  
[ec2-user@ip-10-0-2-149 ~]$
```

Figure 4 – Linux Terminal of the Test instance

V. DEPLOYMENT STEPS

A. VPC, Subnets, IGW, NACL, NAT

VPC: To accommodate all of the Public and Private Subnets, a VPC with the subnet 10.0.0.0/16 has been constructed in two separate availability zones (AZ-A and AZ-B).

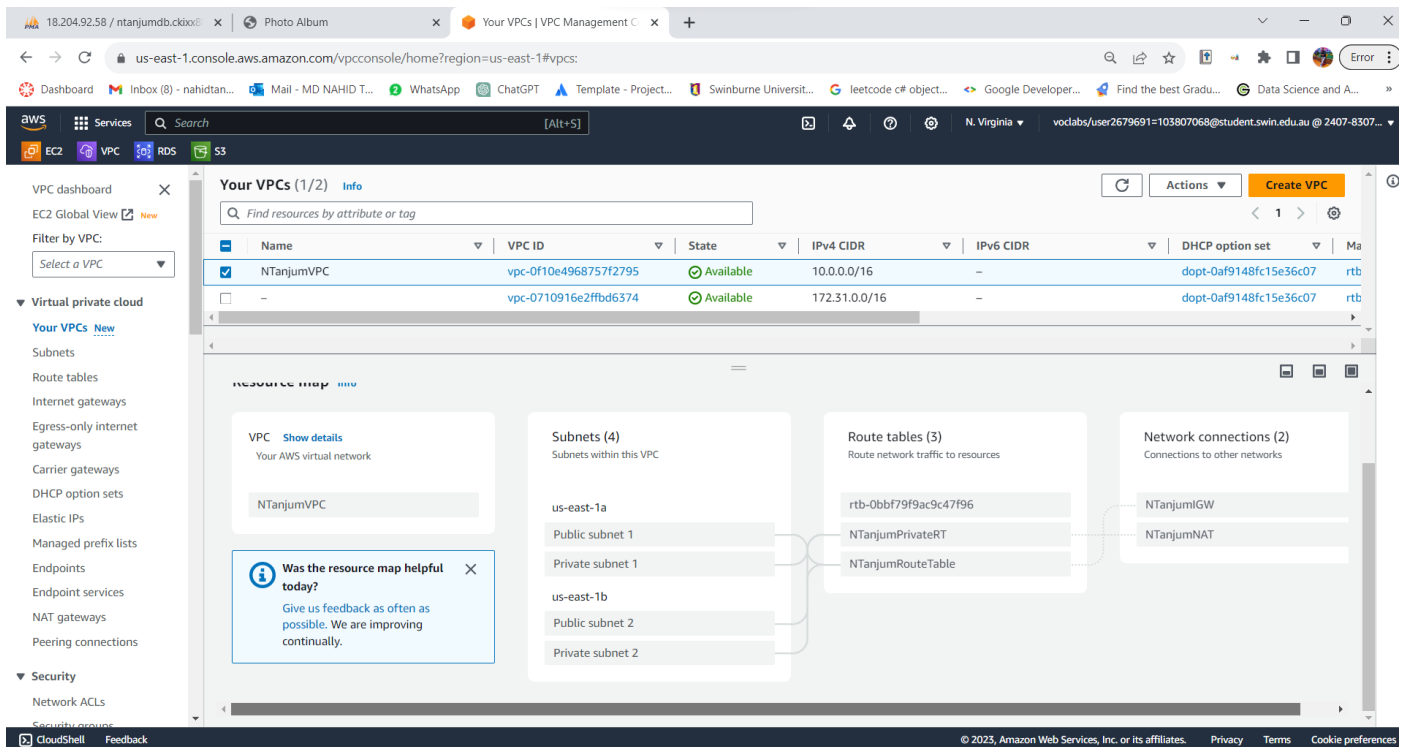


Figure 4 – VPC

Subnets: Four subnets has been created within the VPC for separation of the network.

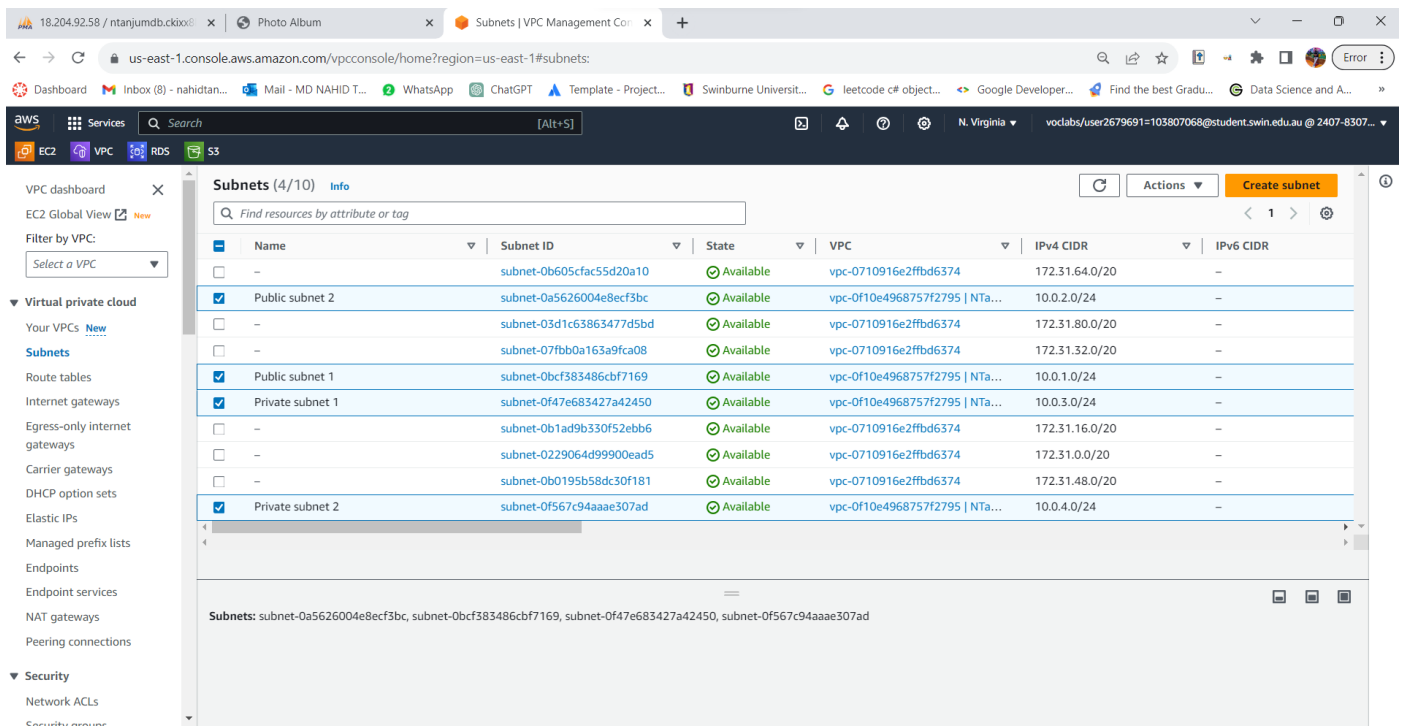


Figure 5 - Subnets

Internet Gateway: In order to implement routing within the subnets and the internet, an Internet Gateway has been constructed.

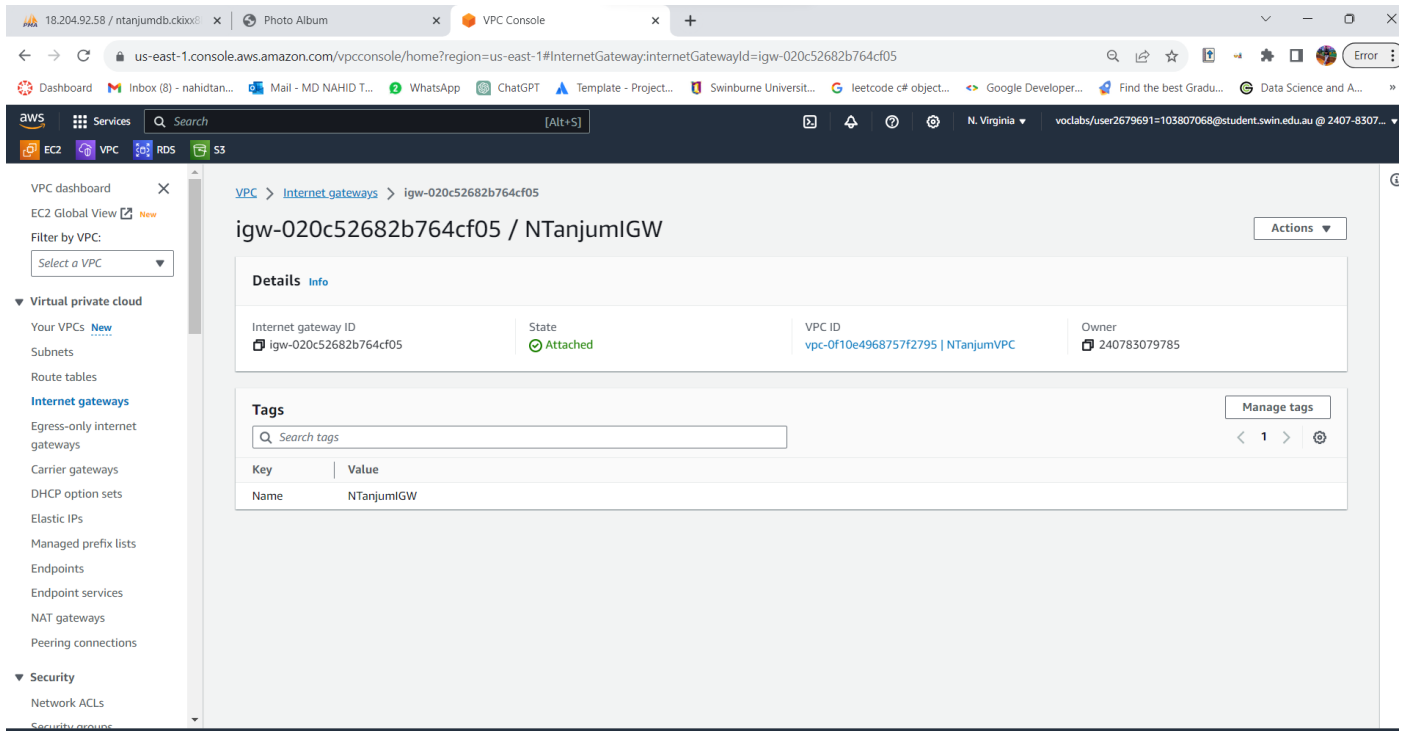


Figure 6 – Internet Gateway

NAT Gateway:

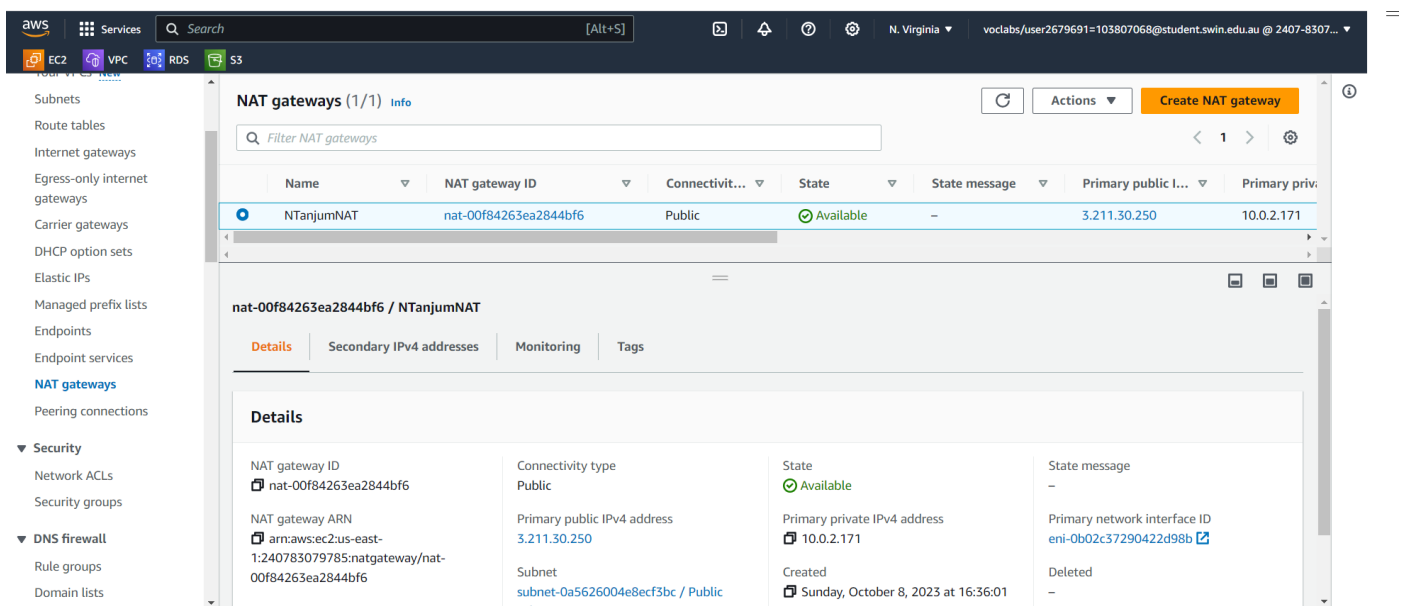


Figure 7 – NAT Gateway

- A. Network ACL: A NACL has been set up with the necessary inbound and outbound rules to limit access to and from the Private Subnet.

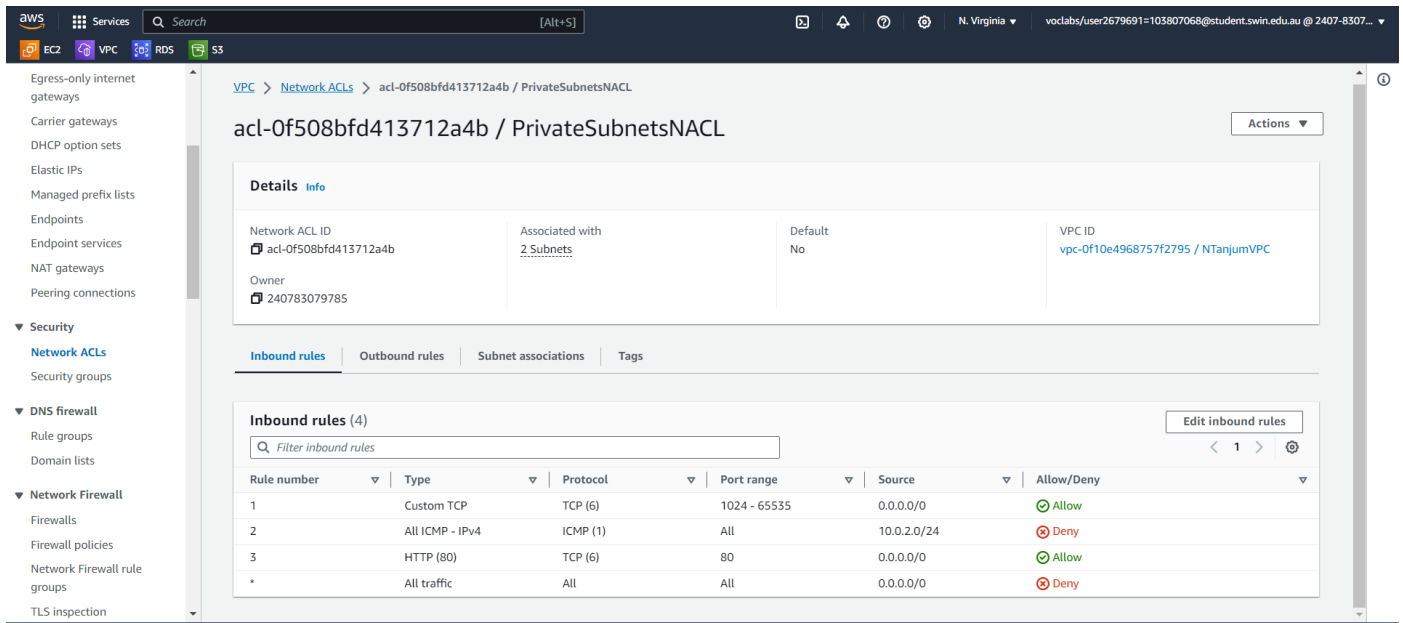


Figure 8 – Network ACL

B. Security Groups

With the stated access restrictions and associated to the appropriate AWS services, Security Groups have been built to function as a firewall.

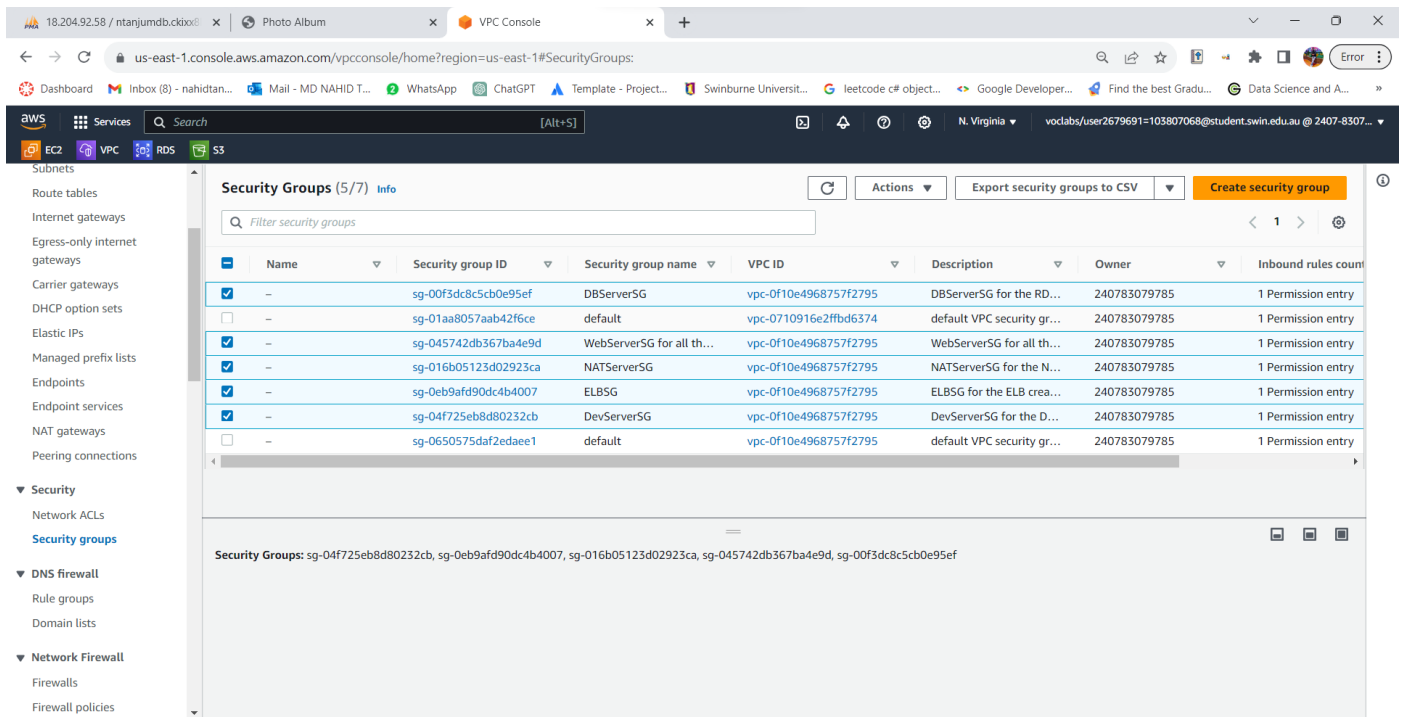


Figure 9 – Security Groups

C. EC2 Instances

The web application "Photo Album" is being hosted by the "DevServer" webserver instance.

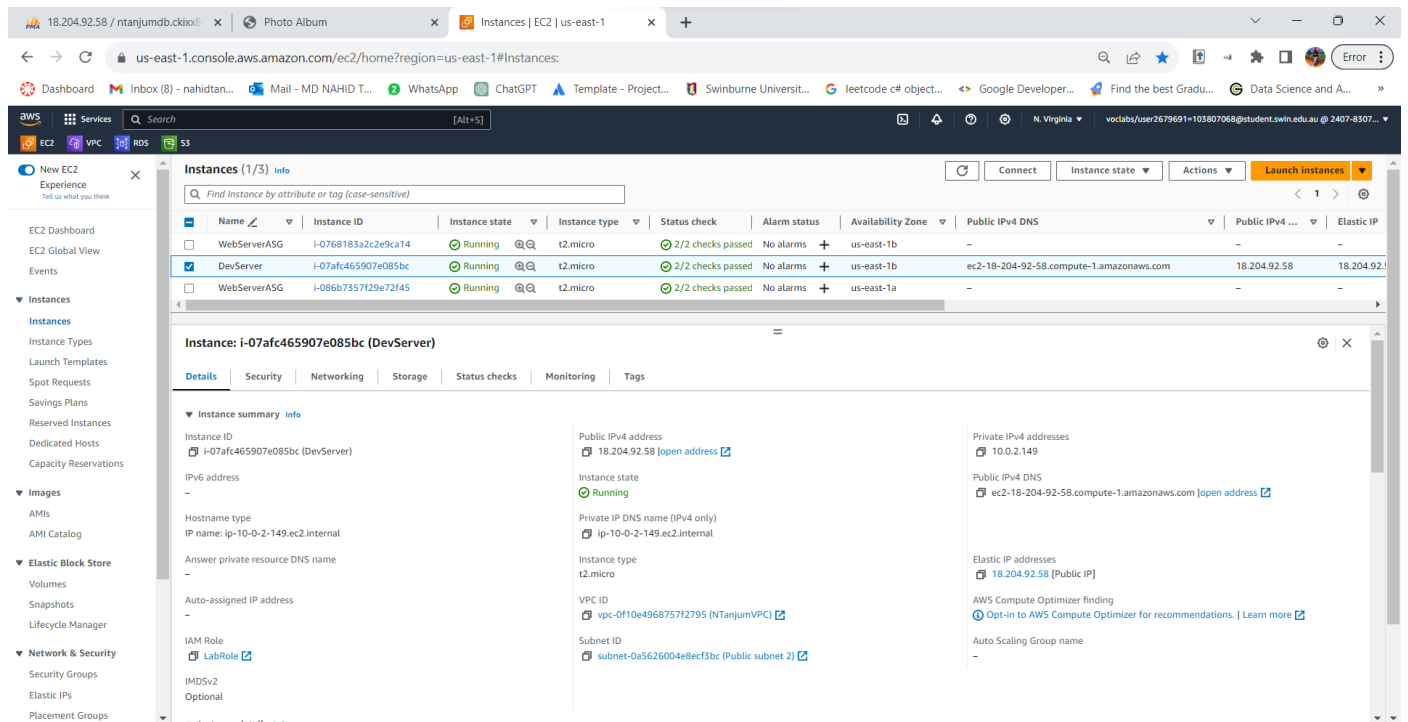


Figure 10 – Devserver Instance

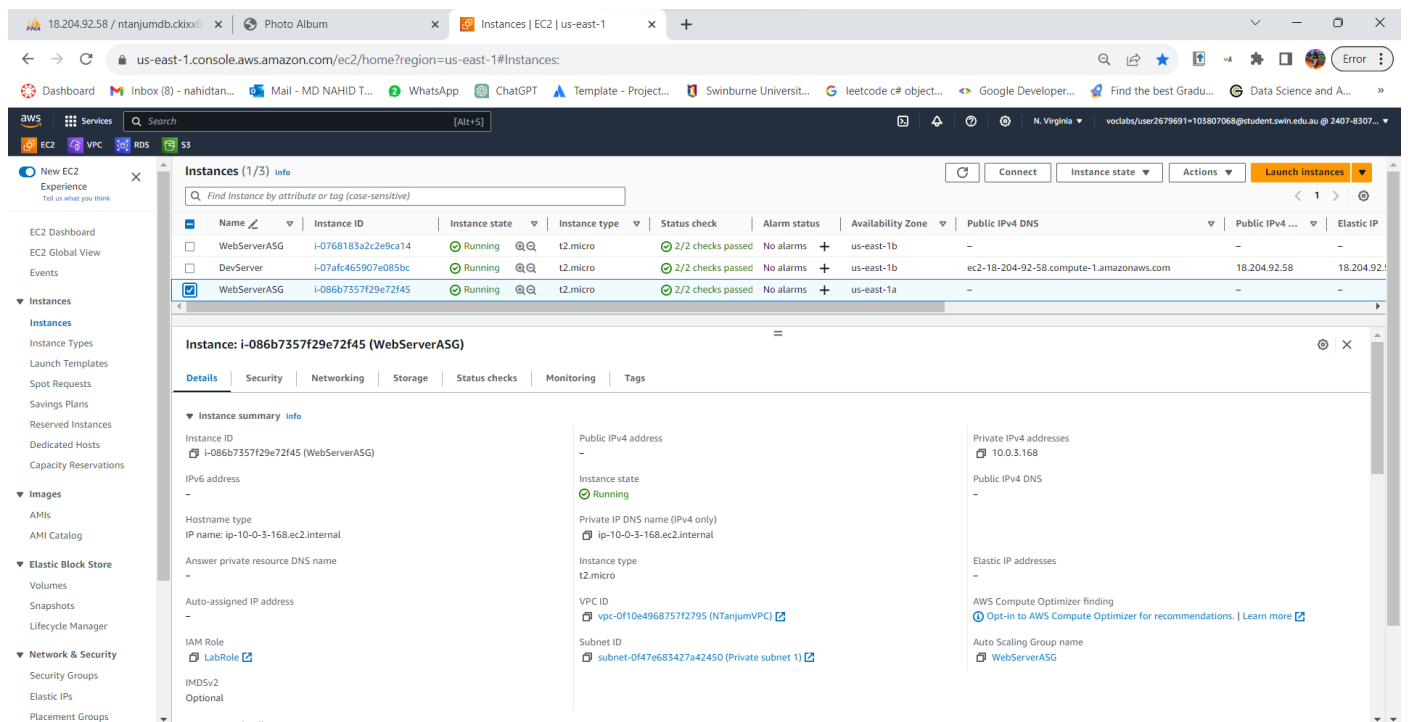


Figure 11 – WebServerASG Instance

D. RDS

To store data with the appropriate subnet groups and security groups applied, MySQL 8.3.34 was used to construct the single zone database instance "ntanjumdb".

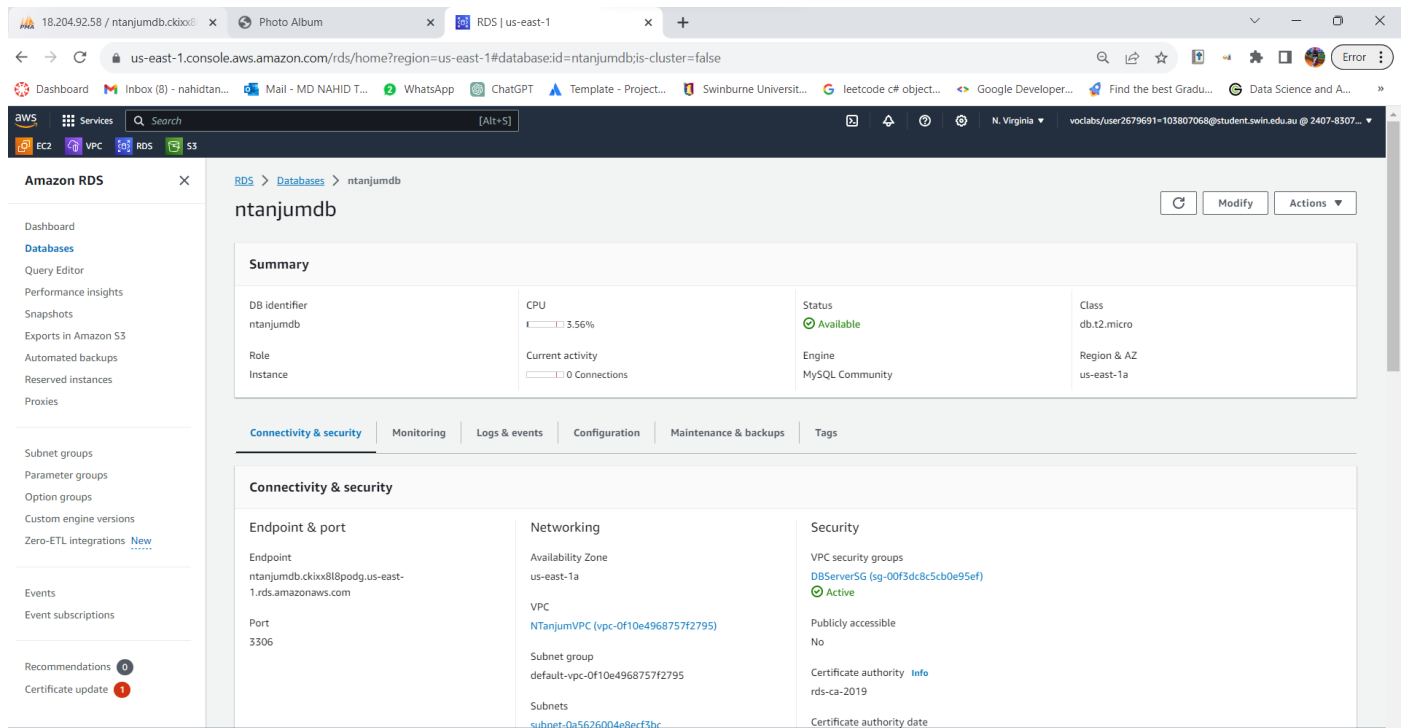


Figure 11 - Database

E. S3

A S3 bucket storage has been set up to store the picture file with the necessary availability and no limits on public access.

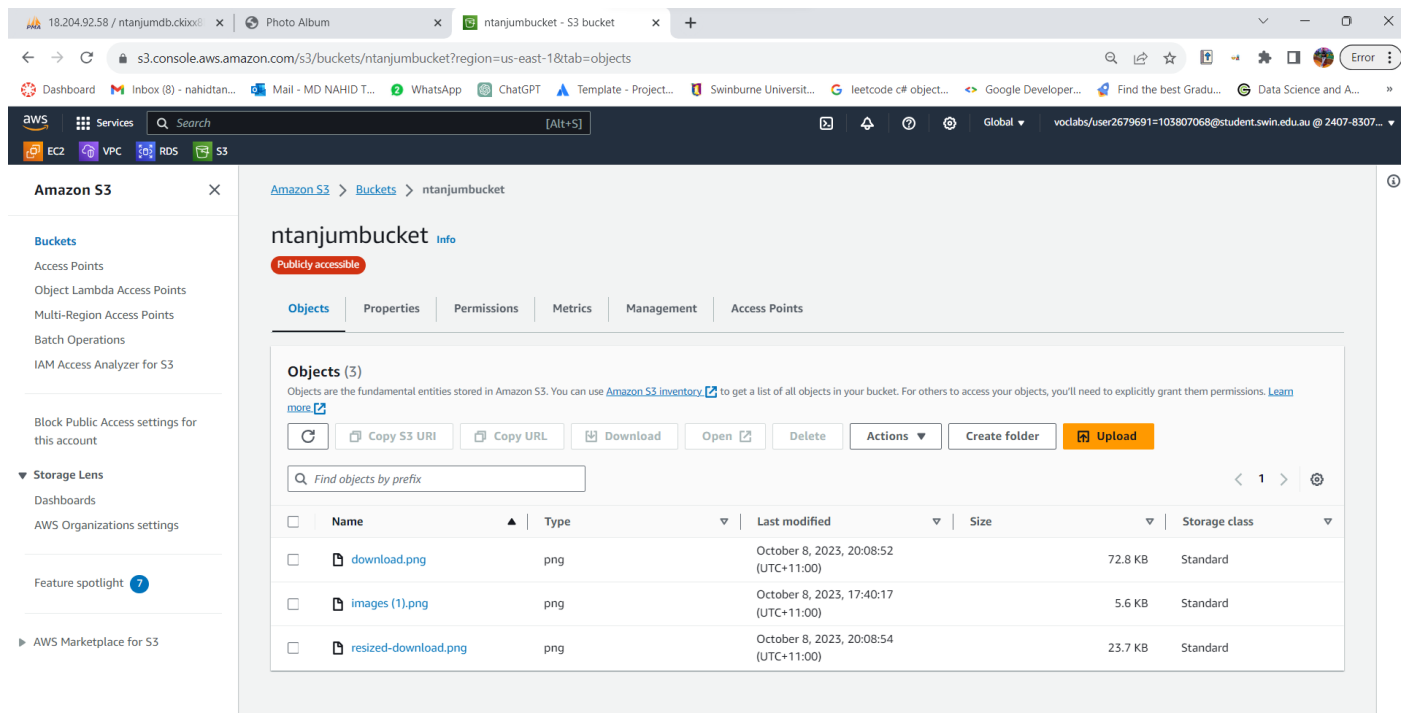


Figure 12 – S3 Bucket Storage

F. AMI

The screenshot displays the 'Image summary' page for the AMI 'ami-0d66ad6dbd87cbb5'. The page is divided into several sections: 'Image summary', 'Permissions', 'Storage', and 'Tags'. The 'Image summary' section provides a comprehensive overview of the AMI's properties, including its ID, name, type, architecture, and creation date. The 'Permissions' section shows the image's share permissions, which are currently set to 'Private'.

Image summary for ami-0d66ad6dbd87cbb5			
AMI ID ami-0d66ad6dbd87cbb5	Image type machine	Platform details Linux/UNIX	Root device type EBS
AMI name DevServerAMI	Owner account ID 240783079785	Architecture x86_64	Usage operation RunInstances
Root device name /dev/xvda	Status Available	Source 240783079785/DevServerAMI	Virtualization type hvm
Boot mode -	State reason -	Creation date Sun Oct 08 2023 18:58:53 GMT+1100 (Australian Eastern Daylight Time)	Kernel ID -
Description Lab AMI for web server	Product codes -	RAM disk ID -	Deprecation time -
Last launched time Sun Oct 08 2023 23:44:48 GMT+1100 (Australian Eastern Daylight Time)	Block devices /dev/xvda=snap-01eeaf4d3adceb479:8:true:gp2		

Permissions

Image share permission
Private
This image is only shared with account IDs, organizations, or OUs that you have specified.

Restrictions for sharing images publicly are managed using *Block public access for AMIs* setting under [Data protection and security](#).

Figure 13 – AMI

G. Launch Template

The screenshot displays the 'Launch Templates' page in the AWS Management Console. It shows a list of launch templates, with 'NTanjum-LT' selected. The 'Launch template details' section provides information about the template, including its ID, name, default version, and owner. The 'Launch template version details' section shows the details for the selected version, including its ID, name, and creation date.

Launch Template ID	Launch Template Name	Default Version	Latest Version	Create Time	Created By
lt-0436c9eafdd86e2e5	NTanjum-LT	1	1	2023-10-08T08:22:06.000Z	arn:aws:sts::240783079785:assumed-rol...

NTanjum-LT (lt-0436c9eafdd86e2e5)

Launch template details

Launch template ID lt-0436c9eafdd86e2e5	Launch template name NTanjum-LT	Default version 1	Owner arn:aws:sts::240783079785:assumed-role/voclabs/user2679691=103807068@student.swin.edu.au
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Launch template version details

Version	Description	Date created	Created by
1			

Figure 14 – Launch Template

H. Load Balancers

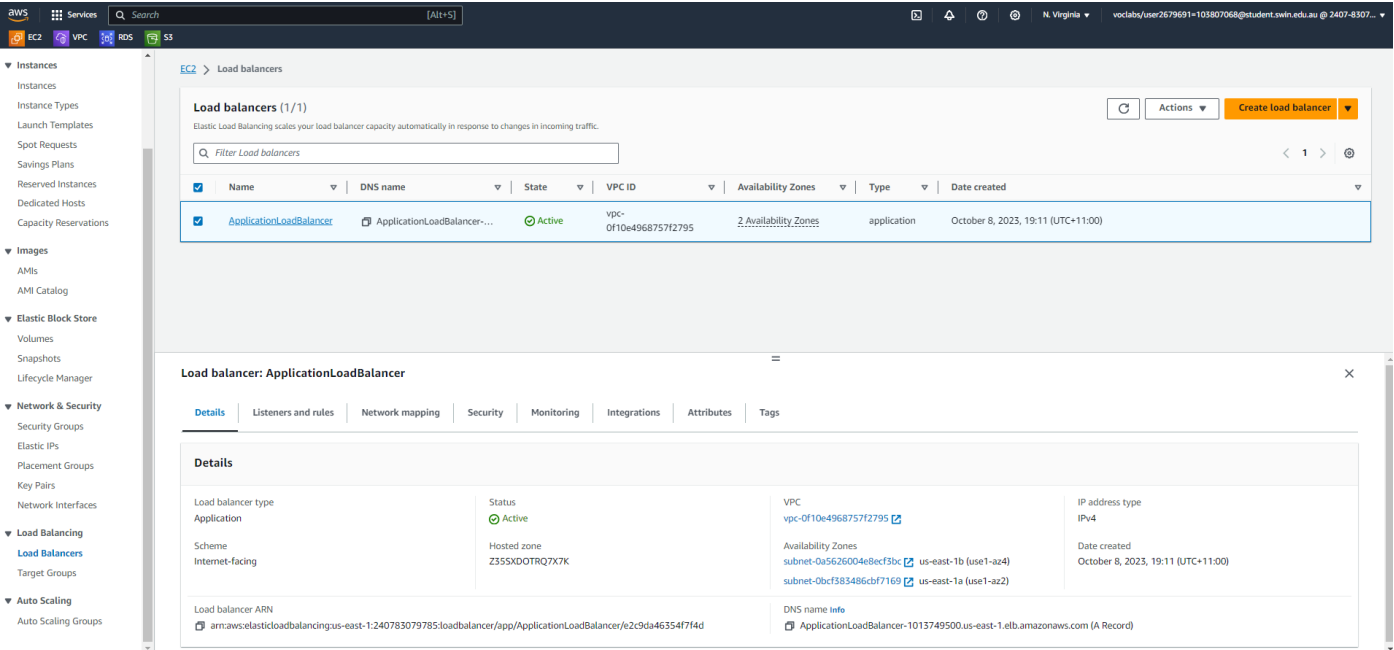


Figure 15 – Load Balancer

I. Target Groups

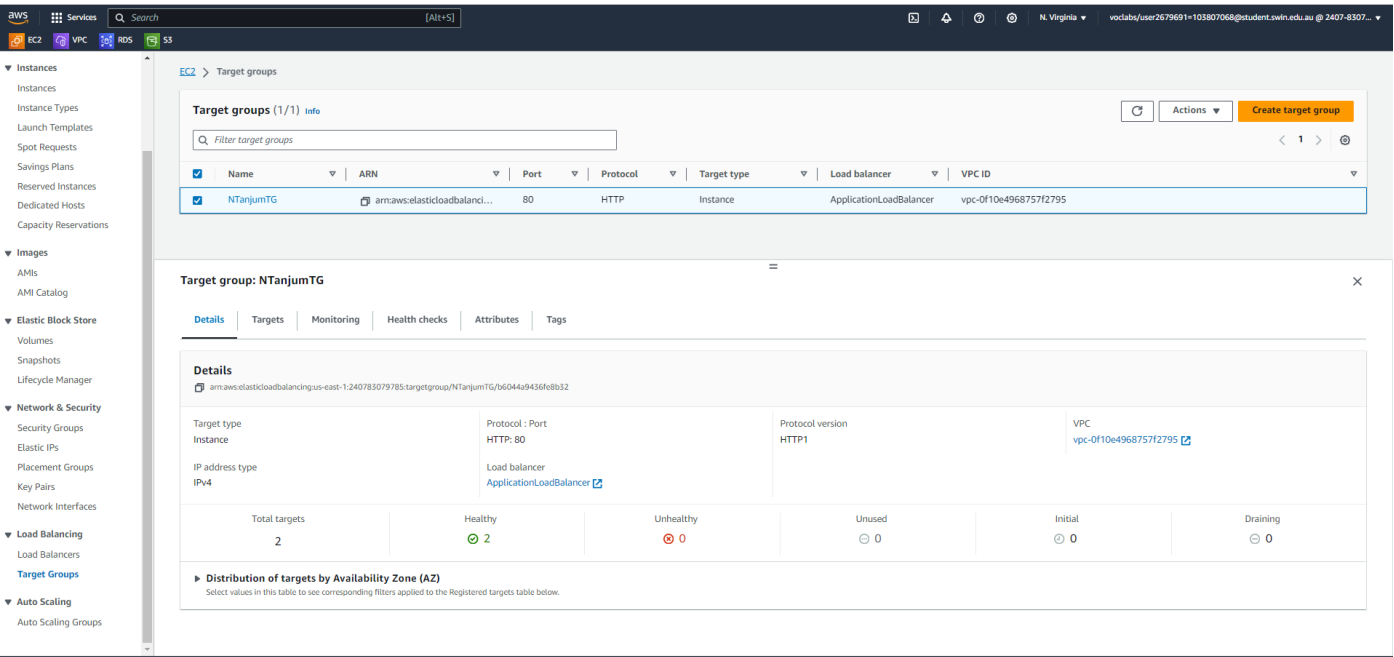


Figure 16 – Target Groups

J. Auto Scaling groups

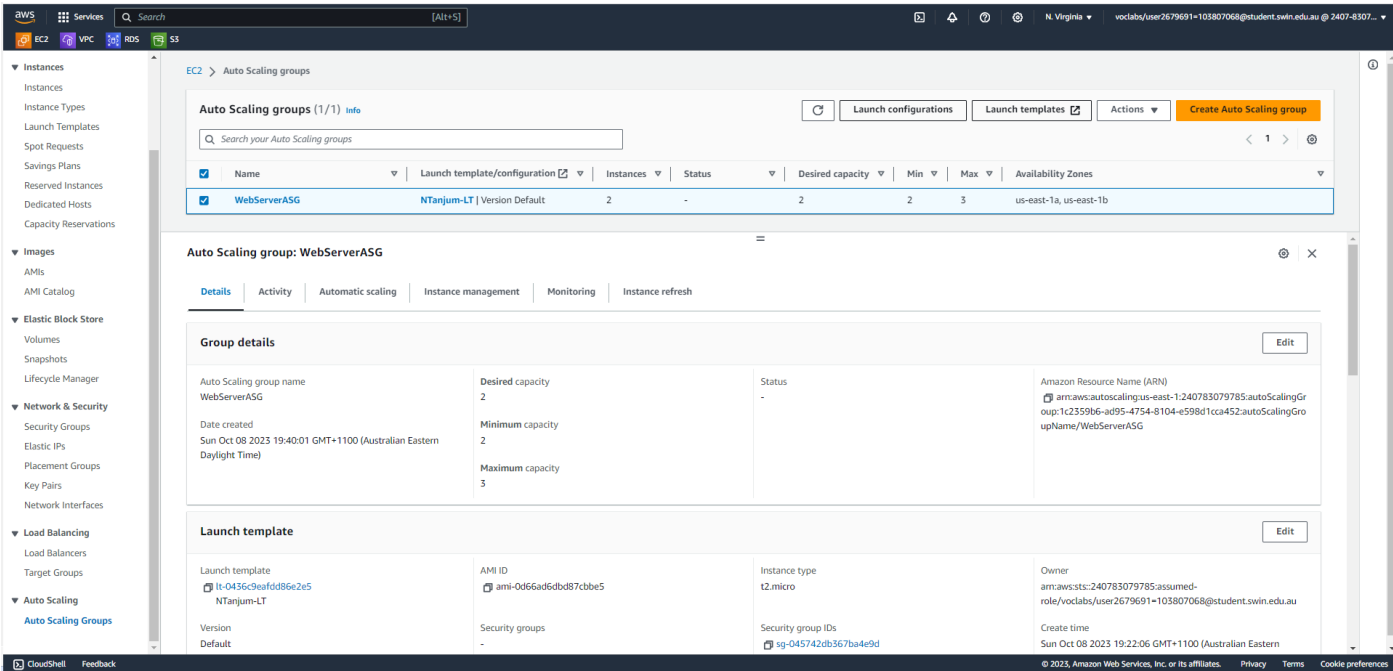


Figure 17 – Auto Scaling groups