LOYALIST COLLEGE
IN TORONTO

WINP2000 - Cloud Management

Week 5 – In class lab 3

Cloud Automation

Assignment Submitted by:

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Course Code: WINP2000
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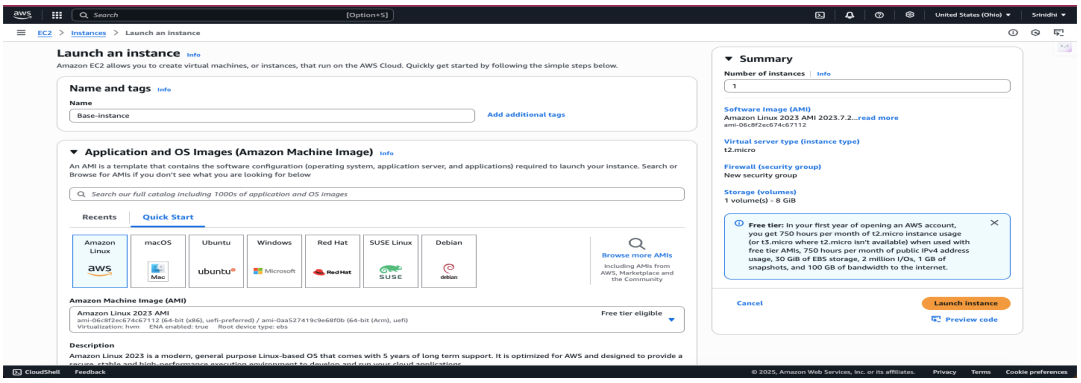
Phase 1: Create a Custom AMI with NGINX and Instance ID Page

Step 1: Launch a Base EC2 Instance Manually

- Go to **AWS Console > EC2 > Launch Instance**
- AMI: Amazon Linux 2
- Instance type: t2.micro
- Security Group: allow **HTTP (80)** and **SSH (22)**
- Key Pair: Select or create a new one
- Launch the instance



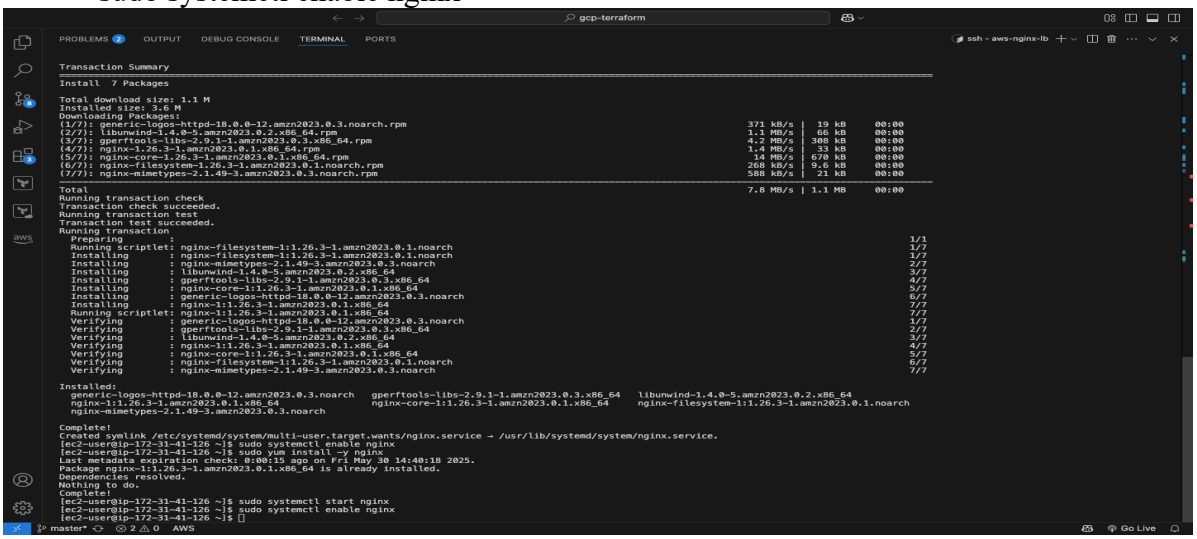
Step 2: Connect to Instance via SSH and Install and Configure NGINX

Connect to the Base Instance:

ssh -i nginx-lb.pem ec2-user@3.139.73.226

Once you entered to instance, run below commands:

```
sudo yum update -y
sudo yum install -y nginx
sudo systemctl start nginx
sudo systemctl enable nginx
```



Step 3: Add Dynamic Page with Instance ID

Once you're inside the EC2 terminal:

```
Vi gen-page.sh
```

Paste the following into the file:

```
#!/bin/bash
INSTANCE_ID=$(curl -s http://169.254.169.254/latest/meta-data/instance-id)
echo "<html>
  <head>
    <title>Welcome to Srinidhi's website of nginx and load balancer project</title>
  </head>
  <body style=\"font-family:Arial; text-align:center; margin-top:100px; background-color:#f0f8ff;\">
    <h1 style=\"color:#2e8b57;\">Welcome to Srinidhi's website of nginx and load balancer project</h1>
    <h2>Running on Instance: <span style=\"color:#ff4500;\">$INSTANCE_ID</span></h2>
  </body>
</html>" | sudo tee /usr/share/nginx/html/index.html
```

Run the file:

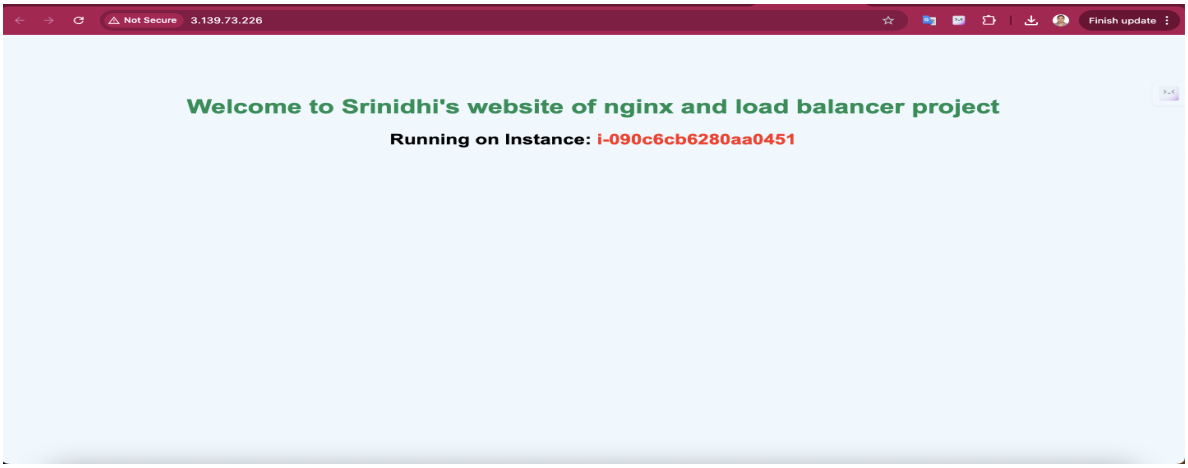
```
./gen-page.sh
```

Check it works:

In Terminal: curl localhost

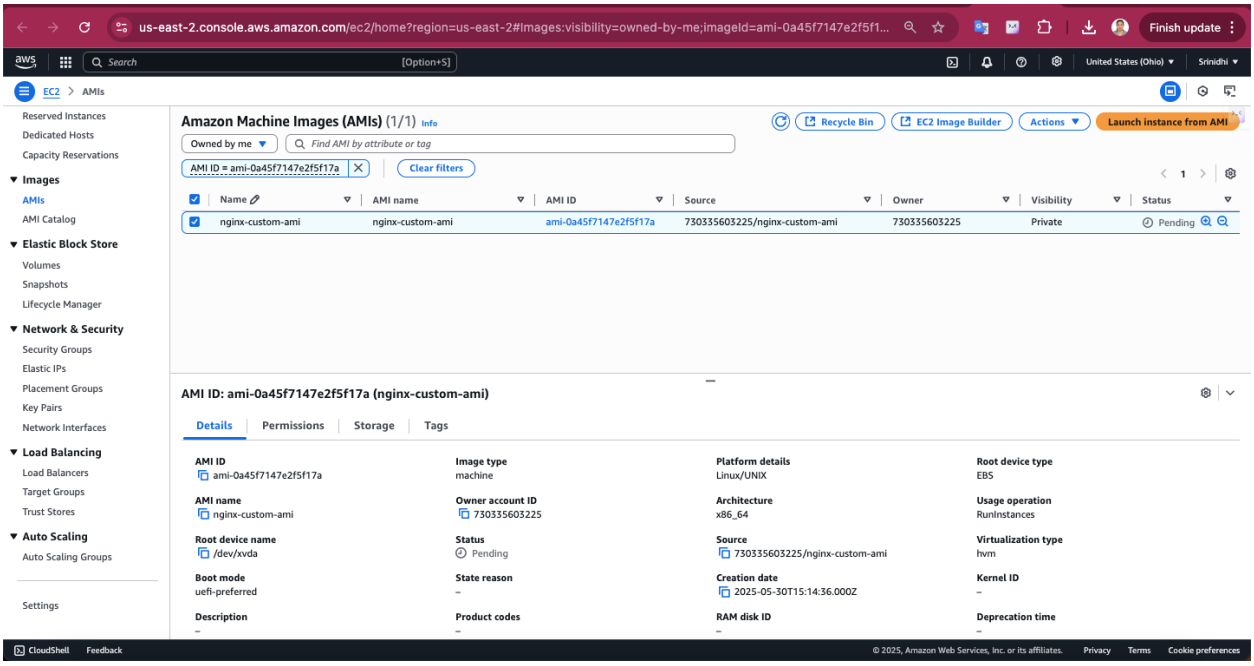
```
[ec2-user@ip-172-31-41-126 ~]$ vi gen-page.sh
[ec2-user@ip-172-31-41-126 ~]$ ./gen-page.sh
<html>
  <head>
    <title>Welcome to Srinidhi's website of nginx and load balancer project</title>
  </head>
  <body style="font-family:Arial; text-align:center; margin-top:100px; background-color:#f0f8ff;">
    <h1 style="color:#2e8b57;">Welcome to Srinidhi's website of nginx and load balancer project</h1>
    <h2>Running on Instance: <span style="color:#ff4500;"></span></h2>
  </body>
</html>
[ec2-user@ip-172-31-41-126 ~]$ curl -s http://169.254.169.254/latest/meta-data/instance-id
[ec2-user@ip-172-31-41-126 ~]$ curl -s http://169.254.169.254/latest/meta-data/instance-id
[ec2-user@ip-172-31-41-126 ~]$ curl http://169.254.169.254/latest/meta-data/
[ec2-user@ip-172-31-41-126 ~]$ curl http://169.254.169.254/latest/meta-data/
[ec2-user@ip-172-31-41-126 ~]$ curl -s http://169.254.169.254/latest/meta-data/instance-id
i-090c6cb6280aa0451[ec2-user@ip-172-31-41-126 ~]$
[ec2-user@ip-172-31-41-126 ~]$ ./gen-page.sh
<html>
  <head>
    <title>Welcome to Srinidhi's website of nginx and load balancer project</title>
  </head>
  <body style="font-family:Arial; text-align:center; margin-top:100px; background-color:#f0f8ff;">
    <h1 style="color:#2e8b57;">Welcome to Srinidhi's website of nginx and load balancer project</h1>
    <h2>Running on Instance: <span style="color:#ff4500;">i-090c6cb6280aa0451</span></h2>
  </body>
</html>
[ec2-user@ip-172-31-41-126 ~]$ exit
logout
```

In browser:



Step 4: Create Custom AMI

- Go to **EC2 > Instances**
- Right-click your instance → **Image > Create Image**
- Name: nginx-custom-ami
- Click **Create Image**
- Wait for the AMI to be "available" under **EC2 > AMIs**
- Copy the **AMI ID** : ami-0a45f7147e2f5f17a
-



Phase 2: Terraform Project Setup

Step 1: Create Project Folder and Terraform Files

You'll need:

- main.tf
- variables.tf
- outputs.tf
- gen-page.sh

Link to check Terraform Code: https://github.com/srinidhisivakumar/aws-nginx-lb

Phase 3: Run Terraform

Step 1: Initialize

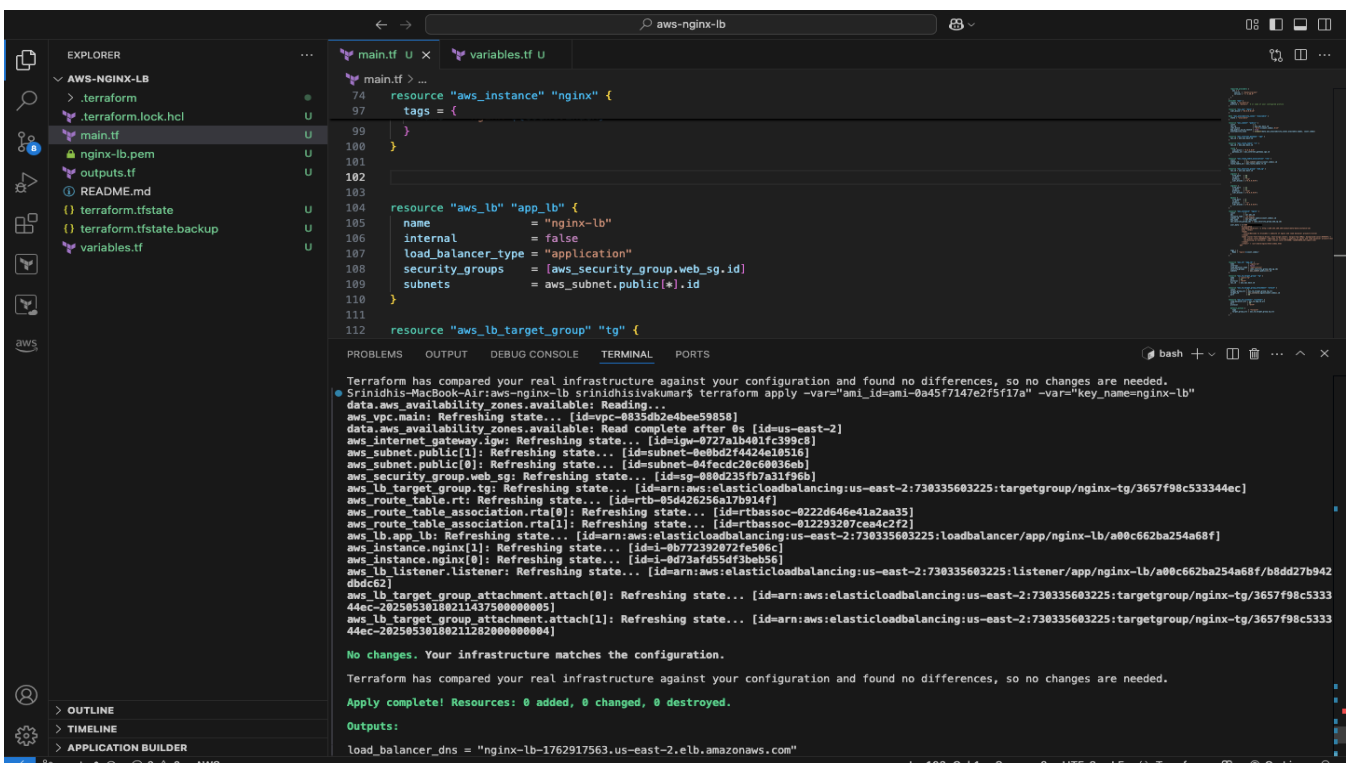
terraform init

Step 2: Plan

terraform plan -var="ami_id= ami-0a45f7147e2f5f17a " -var="key_name=nginx-lb.pem"

Step 3: Apply

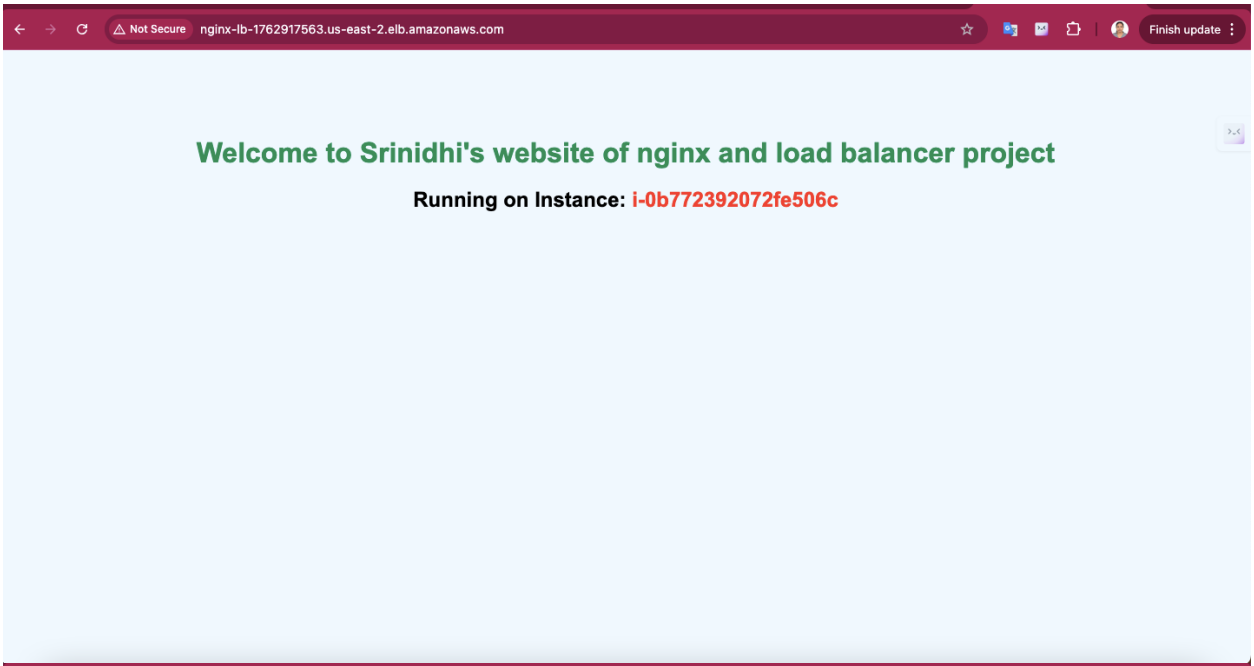
terraform apply -var="ami_id= ami-0a45f7147e2f5f17a " -var="key_name=nginx-lb.pem"

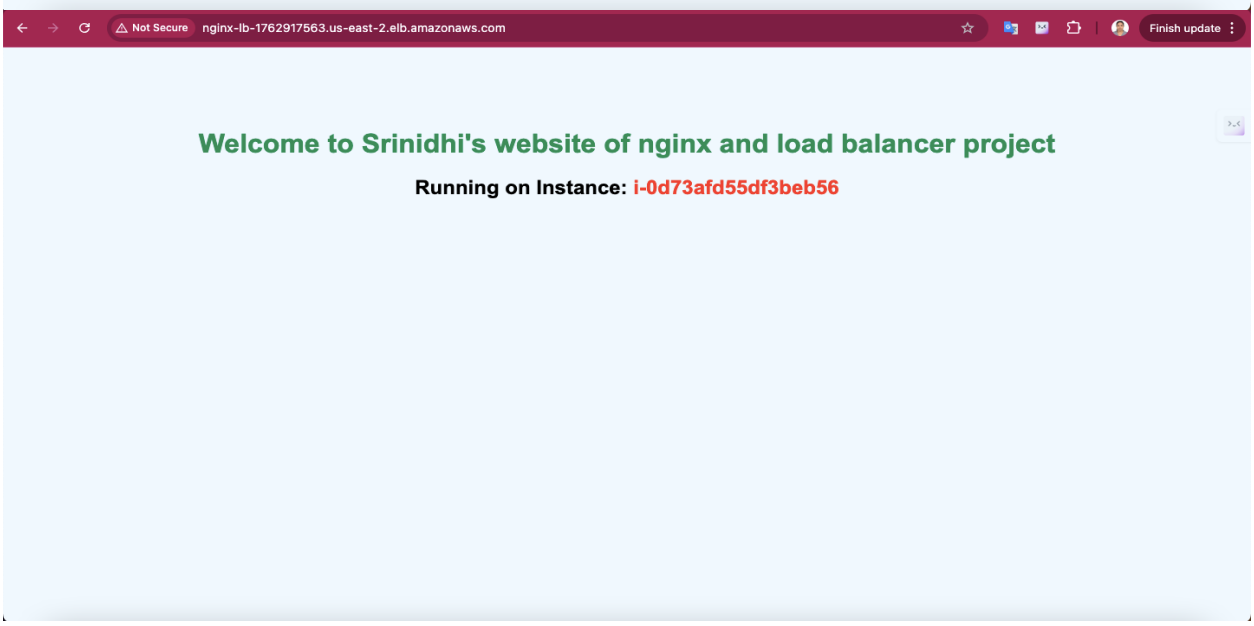


Phase 4: Test & Capture Outputs (Uploaded video in GitHub)

1. Copy the DNS from Terraform output.
2. Paste it into your browser.
3. Refresh the page multiple times to see both instance IDs appear

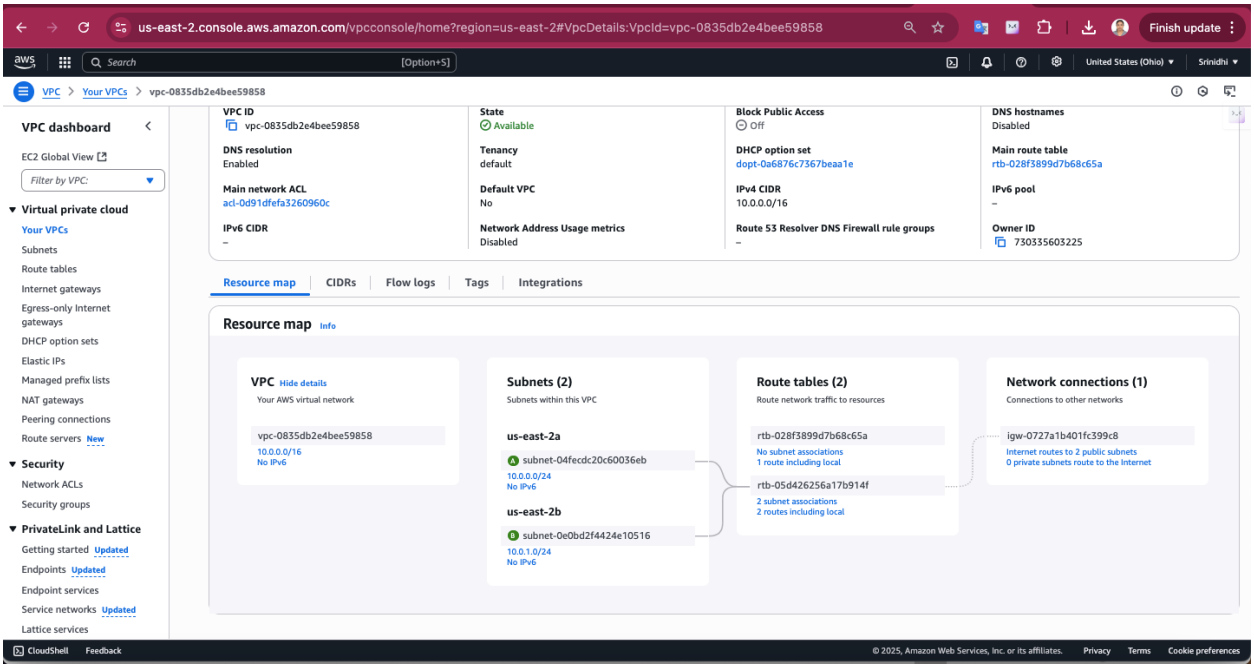
LB DNS: http://nginx-lb-1762917563.us-east-2.elb.amazonaws.com/





Video Link: https://github.com/srinidhisivakumar/aws-nginx-lb/tree/master/video-output

VPC console:



Security Group inbound rules:

Type	Protocol	Port	Source
SSH	TCP	22	My IP
HTTP	TCP	80	0.0.0.0/0