

Cloud Assessment Documentation

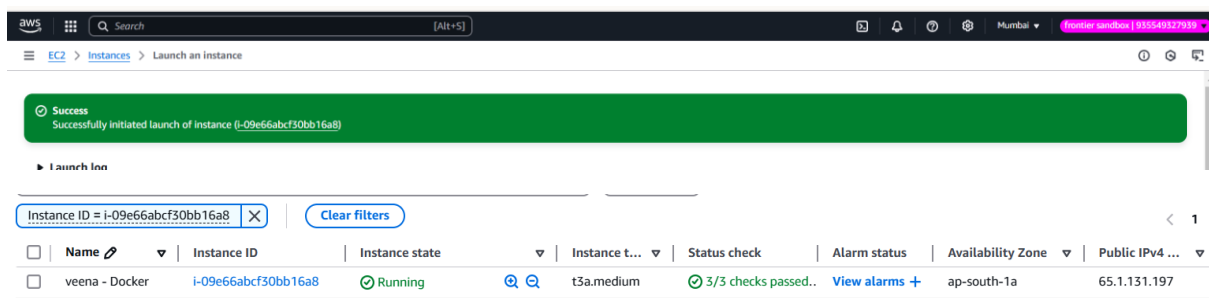
Task 2 :

Objective: Set up a basic virtualized environment using open-source tools like Docker.

Created a virtualized environment (Ngnix) Application using Docker :

Steps :

. Launched a Ubuntu server with basic configurations and best practices:



. Logged into the server and installed docker.

Cmds: sudo apt update
 sudo apt install docker.io -y

To cross-check: docker --version

```
Preparing to unpack .../5-dnsmasq-base_2.90-2build2_amd64.deb ...
Unpacking dnsmasq-base (2.90-2build2) ...
Selecting previously unselected package docker.io.
Preparing to unpack .../6-docker.io_26.1.3-0ubuntu1~24.04.1_amd64.deb ...
Unpacking docker.io (26.1.3-0ubuntu1~24.04.1) ...
Selecting previously unselected package ubuntu-fan.
Preparing to unpack .../7-ubuntu-fan_0.12.16_all.deb ...
Unpacking ubuntu-fan (0.12.16) ...
Setting up dnsmasq-base (2.90-2build2) ...
Setting up runc (1.1.12-0ubuntu3.1) ...
Setting up dns-root-data (2023112702-willsync1) ...
Setting up bridge-utils (1.7.1-1ubuntu2) ...
Setting up pigz (2.8-1) ...
Setting up containerd (1.7.12-0ubuntu4.1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/containerd.service → /usr/lib/systemd/system/containerd.service.
Setting up ubuntu-fan (0.12.16) ...
Created symlink /etc/systemd/system/multi-user.target.wants/ubuntu-fan.service → /usr/lib/systemd/system/ubuntu-fan.service.
Setting up docker.io (26.1.3-0ubuntu1~24.04.1) ...
info: Selecting GID from range 100 to 999 ...
info: Adding group `docker' (GID 113) ...
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /usr/lib/systemd/system/docker.service.
Created symlink /etc/systemd/system/sockets.target.wants/docker.socket → /usr/lib/systemd/system/docker.socket.
Processing triggers for dbus (1.14.10-4ubuntu4.1) ...
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
root@ip-172-31-46-200:~# docker --version
Docker version 26.1.3, build 26.1.3-0ubuntu1~24.04.1
root@ip-172-31-46-200:~#
```

. Created directory for project: nginx-docker

. Created Basic HTML Page & Docker file the OS, dependencies, and how to run the service inside the container are below,

Session ID: Veena-fptt6c2t648xne4t99yxtrta54

Instance ID: i-09e66abcf30bb16a8

```
root@ip-172-31-46-200:/nginx-docker# ls
dockerfile index.html
root@ip-172-31-46-200:/nginx-docker# cat index.html
<html>
<head>
  <title>Welcome to Nginx</title>
</head>
<body>
  <h1>Hello from Nginx Docker Container!</h1>
</body>
</html>" > index.html

root@ip-172-31-46-200:/nginx-docker# cat dockerfile
# Step 1: Specify the base OS and dependencies
FROM ubuntu:24.04

# Step 2: Set environment variables to prevent interactive prompts during builds
ENV DEBIAN_FRONTEND=noninteractive

# Step 3: Update the OS and install dependencies
RUN apt-get update && apt-get install -y \
    nginx \
    curl \
    && apt-get clean

# Step 4: Copy custom files into the container
COPY index.html /var/www/html/index.html

# Step 5: Configure Nginx (optional, if needed)
# COPY default.conf /etc/nginx/sites-available/default

# Step 6: Expose the service port
EXPOSE 80

# Step 7: Specify the command to run the service
CMD ["nginx", "-g", "daemon off;"]
```

.Created the README.md file

```
root@ip-172-31-46-200:/nginx-docker# cat README.md
# Dockerized Nginx Setup

This repository contains a simple Dockerized Nginx setup to serve a basic HTML page.

## Files Included
- `Dockerfile`: Defines the container environment.
- `index.html`: A sample web page to be served by Nginx.
- `README.md`: Instructions on setting up and running the container.

## Prerequisites
1. Install [Docker](https://www.docker.com/get-started) on your system.
2. Clone this repository:
   ```bash
 git clone https://github.com/<username>/<repository>.git
 cd <repository>
root@ip-172-31-46-200:/nginx-docker#
```

. Built & started the docker image using below commands :

```
docker build -t my-nginx
```

```
docker run -d -p 8080:80 --name nginx-container my-nginx
```

```

Setting up openssl (3.0.13-0ubuntu3.4) ...
Setting up libpam-cap:amd64 (1:2.66-5ubuntu2) ...
Setting up publicsuffix (20231001.0357-0.1) ...
Setting up libldap2:amd64 (2.6.7+dfsg-1-explubuntu8.1) ...
Setting up libbpf1:amd64 (1:1.3.0-2build2) ...
Setting up ca-certificates (20240203) ...
Updating certificates in /etc/ssl/certs...
146 added, 0 removed; done.
Setting up libgssapi-krb5-2:amd64 (1.20.1-6ubuntu2.2) ...
Setting up libssh-4:amd64 (0.10.6-2build2) ...
Setting up libcurl4t64:amd64 (8.5.0-2ubuntu10.5) ...
Setting up libtirpc3t64:amd64 (1.3.4+ds-1.1build1) ...
Setting up iproute2 (6.1.0-1ubuntu6) ...
Setting up curl (8.5.0-2ubuntu10.5) ...
Setting up nginx (1.24.0-2ubuntu7.1) ...
invoke-rc.d: unknown initscript, /etc/init.d/nginx not found.
invoke-rc.d: could not determine current runlevel
Setting up nginx-common (1.24.0-2ubuntu7.1) ...
Processing triggers for libc-bin (2.39-0ubuntu8.3) ...
Processing triggers for ca-certificates (20240203) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
--> Removed intermediate container e40524333277
--> 4b90c46362bf
Step 4/6 : COPY index.html /var/www/html/index.html
--> 352a22a31b51
Step 5/6 : EXPOSE 80
--> Running in 38a77995f264
--> Removed intermediate container 38a77995f264
--> 39db5a7ced76
Step 6/6 : CMD ["nginx", "-g", "daemon off;"]
--> Running in 5c144bdc3485
--> Removed intermediate container 5c144bdc3485
--> a6a7c922a2b4
Successfully built a6a7c922a2b4
Successfully tagged my-nginx:latest
root@ip-172-31-46-200:/nginx-docker#

```

Used docker ps -a to list the node .

Session ID: Veena-fptt6c2t648xne4t99yxtrta54

Instance ID: i-09e66abcf30bb16a8

```

root@ip-172-31-46-200:/nginx-docker# docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
526d7a040cf5 my-nginx "nginx -g 'daemon of..." 7 minutes ago Up 7 minutes 0.0.0.0:8080->80/tcp, :::8080->80/tcp nginx-container
root@ip-172-31-46-200:/nginx-docker#

```

. Static website served with Nginx:

Hit public IP with the port in browser: 65.1.131.197:8080



echo "

**Hello from Nginx Docker Container!**

" > index.html



Other cmds used :

- . Stopping the container: `docker stop my-nginx`
- . Removing the container: `docker rm my-nginx`
- . Removing the image: `docker rmi custom-nginx`

Pushed the code to the Github:

- . Installed the git in the project folder server using below cmds :

`git init`

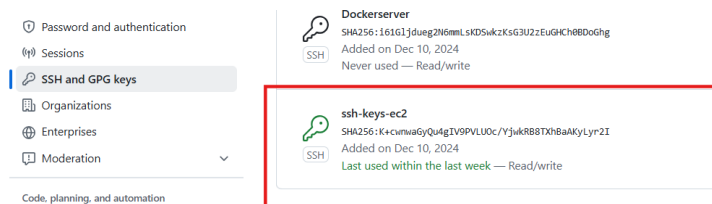
`git add`

- . Generate the ssh key in the folder & copy the key and add to the github credentials.

```

root@ip-172-31-46-200:/nginx-docker# ssh-keygen
Generating public/private ed25519 key pair.
Enter file in which to save the key (/root/.ssh/id_ed25519):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_ed25519
Your public key has been saved in /root/.ssh/id_ed25519.pub
The key fingerprint is:
SHA256:K+cwnwaGyQu4gIV9PVLUOc/YjwkrB8TXhBaKyLyr2I root@ip-172-31-46-200
The key's randomart image is:
+--[ED25519 256]--+
| .==+o= |
| o *+. |
| o o .X |
|+ + + + o + |
|o= + = .S. + |
|+ o + o .o . |
|.. o o+.o |
|oE o B.. |
|.... + |
+----[SHA256]-----+
root@ip-172-31-46-200:/nginx-docker# cd ~/.ssh/
root@ip-172-31-46-200:~/.ssh# ls
authorized_keys id_ed25519 id_ed25519.pub
root@ip-172-31-46-200:~/.ssh# cat id_ed25519.pub
ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAIMZrhwfop3EE2W9UL8Ak0cHdgSILsp8mg7SIm+CSh/I root@ip-172-31-46-200
root@ip-172-31-46-200:~/.ssh# cd
root@ip-172-31-46-200:~# cd /nginx-docker/
root@ip-172-31-46-200:/nginx-docker# ls
README.md dockerfile index.html
root@ip-172-31-46-200:/nginx-docker# git remote add docker git@github.com:Veena-09/nginx-docker-project.git
root@ip-172-31-46-200:/nginx-docker# git push docker main
The authenticity of host 'github.com (20.207.73.82)' can't be established.
ED25519 key fingerprint is SHA256:+DiY3wvvV6TuJJhbpZisF/zLDA0zPMSvHdkr4UvCOqU.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'github.com' (ED25519) to the list of known hosts.

```



. Copy the url from GitHub of ssh and add , push using the below commands.

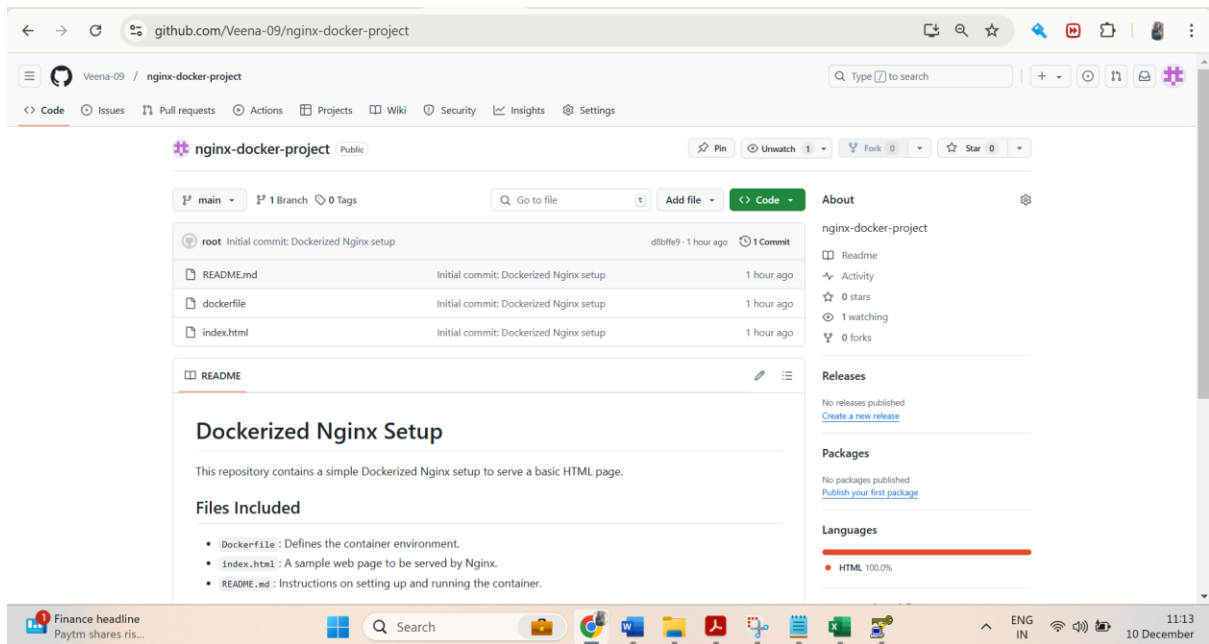
- git remote add docker [git@github.com:Veena-09/nginx-docker-project.git](https://github.com/Veena-09/nginx-docker-project.git)
- git status
- git push docker main -f

```

root@ip-172-31-46-200:/nginx-docker# git push docker main -f
Enumerating objects: 5, done.
Delta compression using up to 2 threads
Compressing objects: 100% (5/5), 1.14 KiB | 1.14 MiB/s, done.
Writing objects: 100% (5/5), 1.14 KiB | 1.14 MiB/s, done.
Total 5 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:Veena-09/nginx-docker-project.git
+ e0b7013...d8bffe9 main -> main (forced update)
root@ip-172-31-46-200:/nginx-docker# git remote add docker git@github.com:Veena-09/nginx-docker-project.git^C
root@ip-172-31-46-200:/nginx-docker# git remote -v
docker git@github.com:Veena-09/nginx-docker-project.git (fetch)
docker git@github.com:Veena-09/nginx-docker-project.git (push)
origin https://github.com/Veena-09/nginx-docker-project.git (fetch)
origin https://github.com/Veena-09/nginx-docker-project.git (push)
root@ip-172-31-46-200:/nginx-docker# git push docker main -f^C
root@ip-172-31-46-200:/nginx-docker# git branch
* main
root@ip-172-31-46-200:/nginx-docker# git branch -r
 docker/main
 origin/main
root@ip-172-31-46-200:/nginx-docker# history

```

. Pushed the files to github.



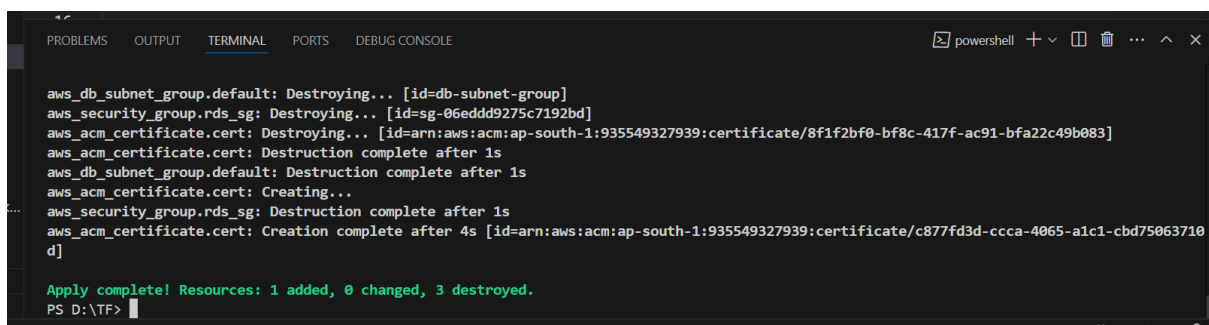
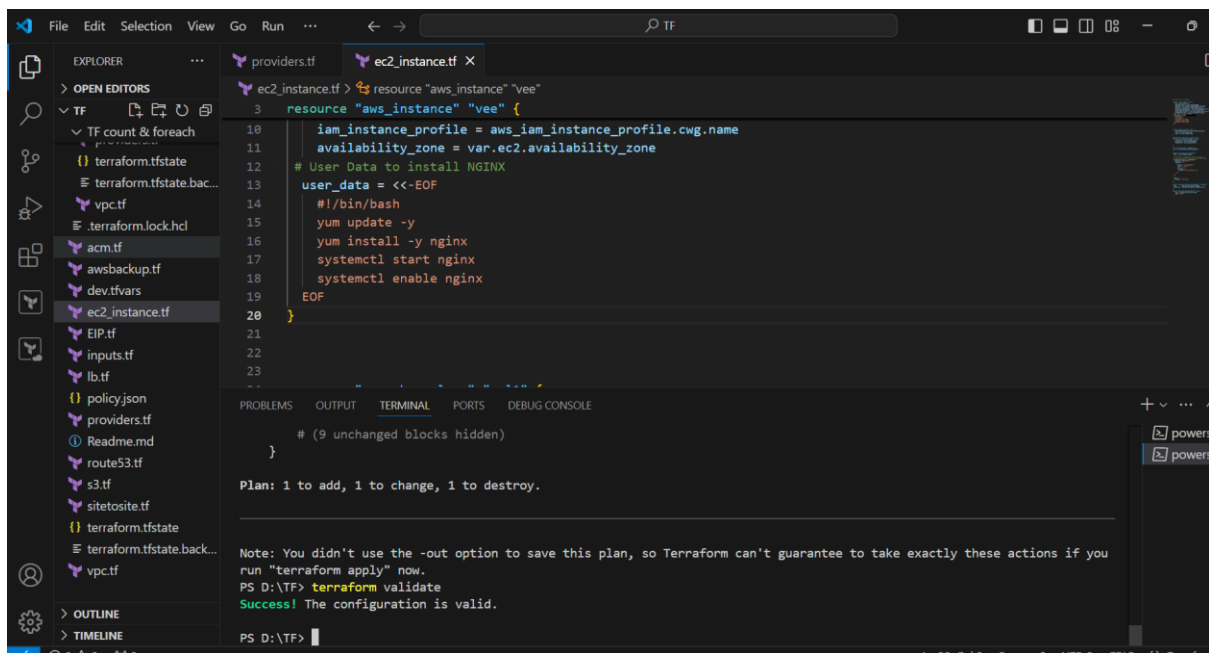
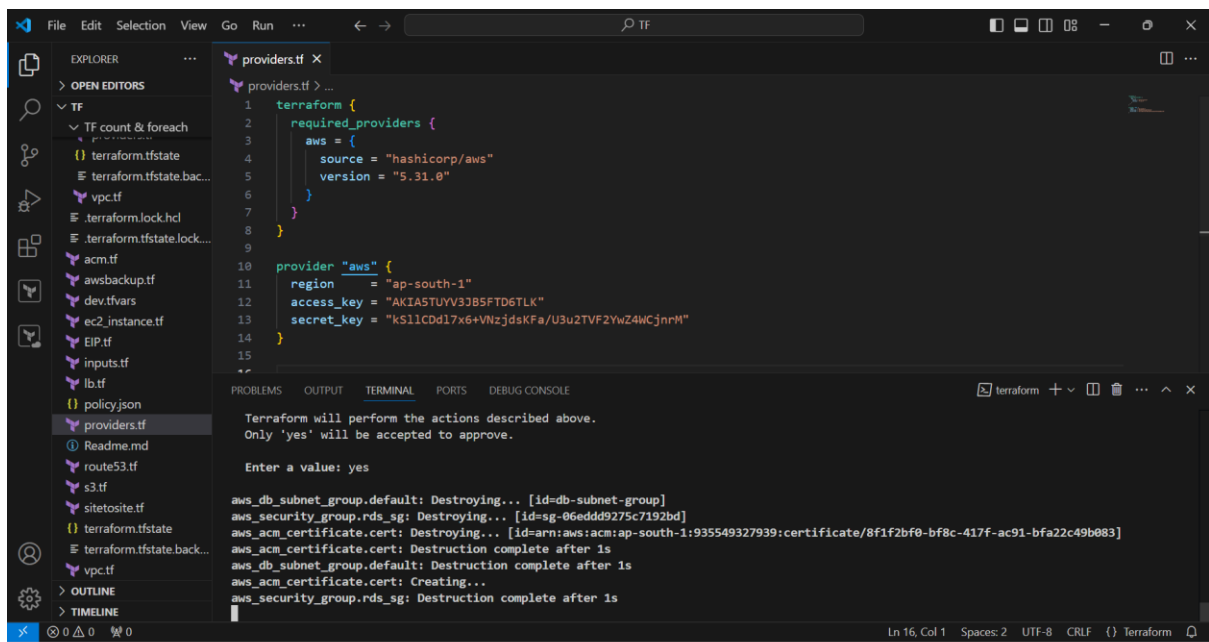
### Task -3.

#### Created an Automated Infrastructure Setup Script

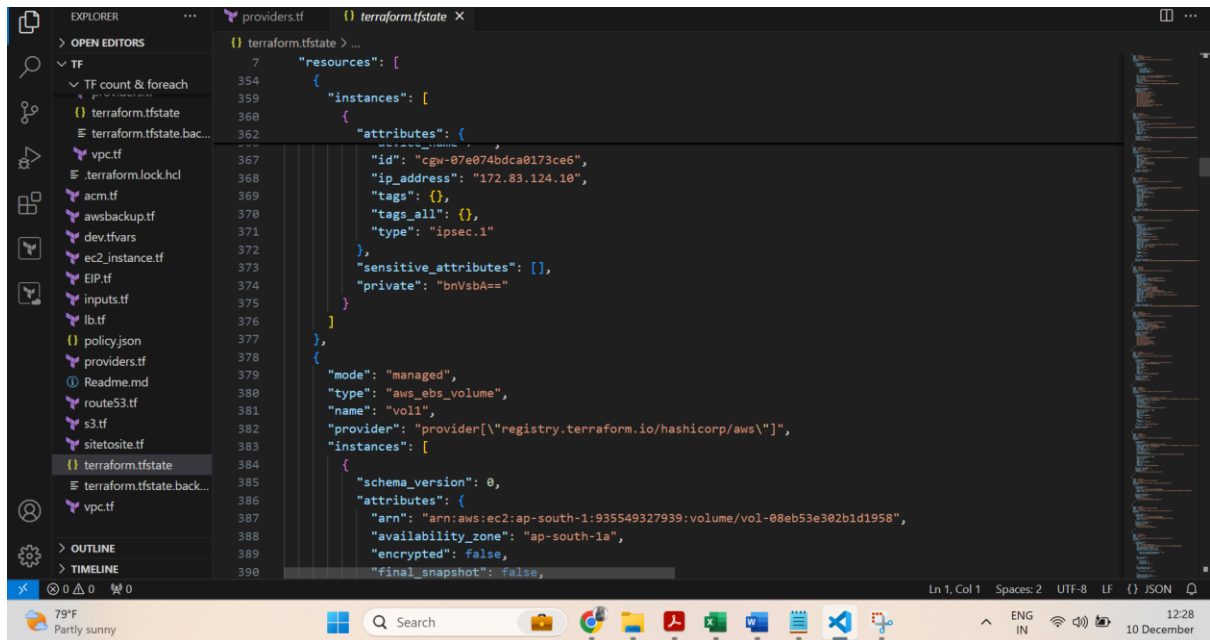
**Objective:** Write a script to automatically set up basic infrastructure, including VMs, networking, or containerized environments.

Used Terraform to automate the infrastructure:

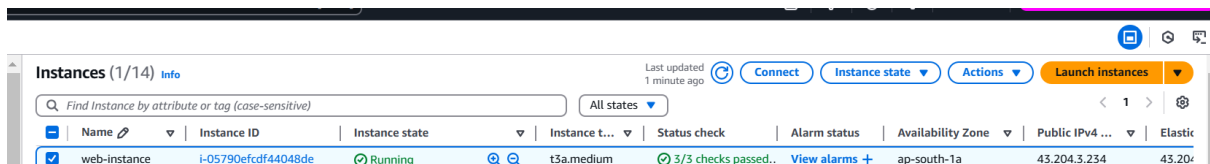
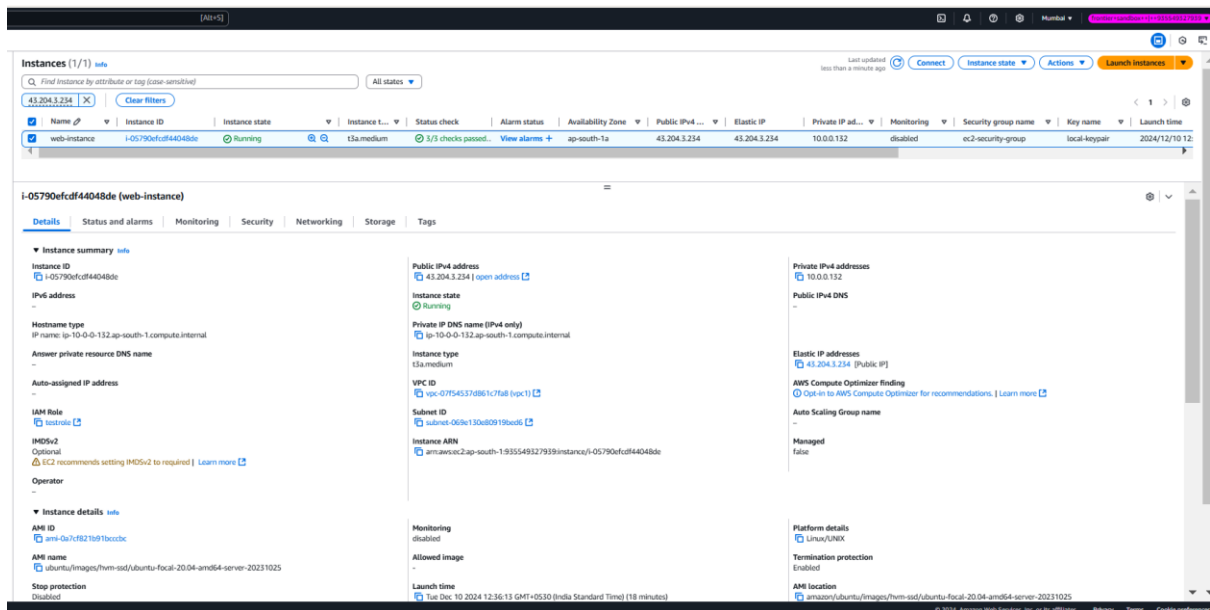
Created services such as ec2 , Vpc , ACM , awsbackup , EIP, route53, site-site ,LB which includes inputs and modules for each using terraform.



TFstatefile:



PFA,





[Alt+S]

Elastic IP addresses (1)

Find resources by attribute or tag

43.204.3.234 X Clear filters

1

<input type="checkbox"/>	Name	Allocated IPv4 address	Type	Allocation ID	Associated instance ID	Private IP address
<input type="checkbox"/>	-	43.204.3.234	Public IP	eipalloc-0fdd3d48c8263c8d9	i-05790efcdf44048de	10.0.0.132

File Edit Selection View Go Run ... TF

EXPLORER

OPEN EDITORS

TF

TF count & foreach

terraform.tfstate

terraform.tfstate.backup

vpctf

.terraform.lock.hcl

acm.tf

awsbackup.tf

devtfvars

ec2\_instance.tf

EIP.tf

inputs.tf

lb.tf

policy.json

providers.tf

Readme.md

route53.tf

s3.tf

sitesite.tf

terraform.tfstate

terraform.tfstate.backup

vpctf

OUTLINE

TIMELINE

0 0 0 0

79°F Partly sunny

Search

ENG IN

12:45 10 December

```
10 resource "aws_backup_vault" "vee" {
11 name = "vee"
12 }
13
14 # create a backup plan
15
16
17 resource "aws_backup_plan" "veebackup" {
18 name = "veebackup"
19 rule {
20 rule_name = "veerules"
21 target_vault_name = aws_backup_vault.vee.name
22 schedule = "cron(0 12 * * ? *)"
23 lifecycle {
24 delete_after = 1
25 }
26 }
27 }
```

PROBLEMS OUTPUT TERMINAL PORTS DEBUG CONSOLE

Enter a value: yes

aws\_acm\_certificate.cert: Destroying... [id=arn:aws:acm:ap-south-1:935549327939:certificate/2b7cbcf8-a13f-4dc4-9176-cb26325b74a3]

aws\_instance.vee: Modifying... [id=i-05790efcdf44048de]

aws\_acm\_certificate.cert: Destruction complete after 0s

aws\_acm\_certificate.cert: Creating...

aws\_instance.vee: Modifications complete after 1s [id=i-05790efcdf44048de]

aws\_acm\_certificate.cert: Creation complete after 5s [id=arn:aws:acm:ap-south-1:935549327939:certificate/10208890-8945-4ed8-a059-3b9113ace217]

Apply complete! Resources: 1 added, 1 changed, 1 destroyed.

PS D:\TF>

Backup plans (4) Info

Create on-demand backup Create backup plan

Backup plans define your backup requirements, including backup schedules, backup retention rules and lifecycle rules.

Find backup plan by name

Filter tag key Any tag key Filter tag value Any tag v...

1

Backup plan name	Last runtime	Last modified
<a href="#">Backup-Testing</a>	December 10, 2024, 12:06:13 (UTC+05:30)	November 27, 2023, 14:19:51 (UTC+05:30)
<a href="#">aws/efs-automatic-backup-plan</a>	December 10, 2024, 10:31:18 (UTC+05:30)	April 3, 2023, 15:35:04 (UTC+05:30)
<a href="#">OTRS Backup</a>	December 10, 2024, 02:00:55 (UTC+05:30)	April 30, 2023, 02:28:39 (UTC+05:30)
<a href="#">veebackup</a>	-	December 10, 2024, 12:14:08 (UTC+05:30)

[Alt+S]

ARC zonal shift for Application Load Balancers has changed

Learn more X

- Use of Amazon Application Recovery Controller (ARC) zonal shifts now requires the Application Load Balancer attribute ARC zonal shift integration to be enabled.
- ARC zonal shift now supports cross-zone enabled Application Load Balancers.

Load balancers (1)

Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.

Filter load balancers

1

<input type="checkbox"/>	Name	DNS name	State	VPC ID	Availability Zones	Type	Date created
<input type="checkbox"/>	vee-lb	vee-lb-tf-279595475.ap-south-1.elb.amazonaws.com	Active	vpc-075453...	2 Availability Zones	application	December 10, 2024, 12:14 (UTC+05:30)

[Alt+S]

Hosted zones (4)

Automatic mode is the current search behavior optimized for best filter results. [To change modes go to settings.](#)

Filter records by property or value

	Hosted zone name	Type	Created by	Record count	Description	Ho
<input type="radio"/>	<a href="#">aps-workspaces.ap-southeast-1.amazonaws.com</a>	Private	Route 53	3	-	Z0
<input type="radio"/>	<a href="#">harisinstant.com</a>	Public	Route 53	2	HostedZone created ...	Z0
<input type="radio"/>	<a href="#">086041644501.realhandsonlabs.net</a>	Public	Route 53	3	Managed by Terraform	Z0
<input type="radio"/>	<a href="#">akashsanatani.shop</a>	Public	Route 53	3	-	Z0

Your VPCs (1) Info

Last updated less than a minute ago

Search

VPC ID: [vpc-07f54537d861c7fa8](#) Clear filters

	Name	VPC ID	State	IPv4 CIDR	IPv6 ...	DHCP option set	Main route table	Main network ACL
<input type="checkbox"/>	<a href="#">vpc1</a>	<a href="#">vpc-07f54537d861c7fa8</a>	Available	10.0.0.0/16	-	<a href="#">dopt-06126110d...</a>	<a href="#">rtb-09fe705ca63eff47e</a>	<a href="#">acl-00abe064efe99d642</a>

Subnets (4) Info

Last updated less than a minute ago

Search

VPC ID: [vpc-07f54537d861c7fa8](#) Clear filters

	Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6 CIDR
<input type="checkbox"/>	-	<a href="#">subnet-04e76dedfcbd18e1e</a>	Available	<a href="#">vpc-07f54537d861c7fa8</a>   <a href="#">vpc1</a>	10.0.9.0/24	-
<input type="checkbox"/>	-	<a href="#">subnet-00e82e2639a7595bc</a>	Available	<a href="#">vpc-07f54537d861c7fa8</a>   <a href="#">vpc1</a>	10.0.5.0/24	-
<input type="checkbox"/>	-	<a href="#">subnet-09c847f1d77472d63</a>	Available	<a href="#">vpc-07f54537d861c7fa8</a>   <a href="#">vpc1</a>	10.0.11.0/24	-
<input type="checkbox"/>	-	<a href="#">subnet-069e130e80919bed6</a>	Available	<a href="#">vpc-07f54537d861c7fa8</a>   <a href="#">vpc1</a>	10.0.0.0/24	-

Route tables (1) Info

Last updated less than a minute ago

Search

Subnet ID: [subnet-069e130e80919bed6](#) Clear filters

	Name	Route table ID	Explicit subnet associ...	Edge associations	Main	VPC	Owner ID
<input type="checkbox"/>	-	<a href="#">rtb-07d9b2b294949644c</a>	<a href="#">subnet-069e130e80919b...</a>	-	No	<a href="#">vpc-07f54537d861c7fa8</a>   <a href="#">vpc1</a>	935549327939

Internet gateways (1) Info

Last updated less than a minute ago


Search

VPC ID: [vpc-07f54537d861c7fa8](#) Clear filters

	Name	Internet gateway ID	State	VPC ID	Owner
<input type="checkbox"/>	IG	<a href="#">igw-0d34f5942898a5870</a>	Attached	<a href="#">vpc-07f54537d861c7fa8</a>   <a href="#">vpc1</a>	935549327939

Web page:

← → ↻ ⚠ Not secure 43.204.3.23 ☆ 🔍 📄 📱 🌐 ⋮



### 43.204.3.23 doesn't support a secure connection

- **Attackers can see and change** information you send or receive from the site.
- **It's safest to visit this site later** if you're using a public network. There is less risk from a trusted network, like your home or work Wi-Fi.

You might also contact the site owner and suggest they upgrade to HTTPS. [Learn more about this warning](#)

Continue to siteGo back

---

main 1 parent @67bedf commit @21c5a5

Q Filter files... 📏

📁 .terraform.lock.hcl

📄 EIP.tf

📄 Readme.md

📄 acm.tf

📄 awsbackup.tf

📄 dev.tfvars

📄 ec2\_instance.tf

📄 inputs.tf

📄 lb.tf

📄 policy.json

📄 providers.tf

📄 route53.tf

📄 17 files changed +4362 -0 lines changed

📄 .terraform.lock.hcl

Load Diff

Some generated files are not rendered by default. Learn more about [customizing how changed files appear](#)

📄 EIP.tf

+21

@@ -0,0 +1,21 @@

1 + # Allocating EIP

2 +

3 + resource "aws\_elb" "elb" {

4 + network\_border\_group = "ap-south-1"

5 +

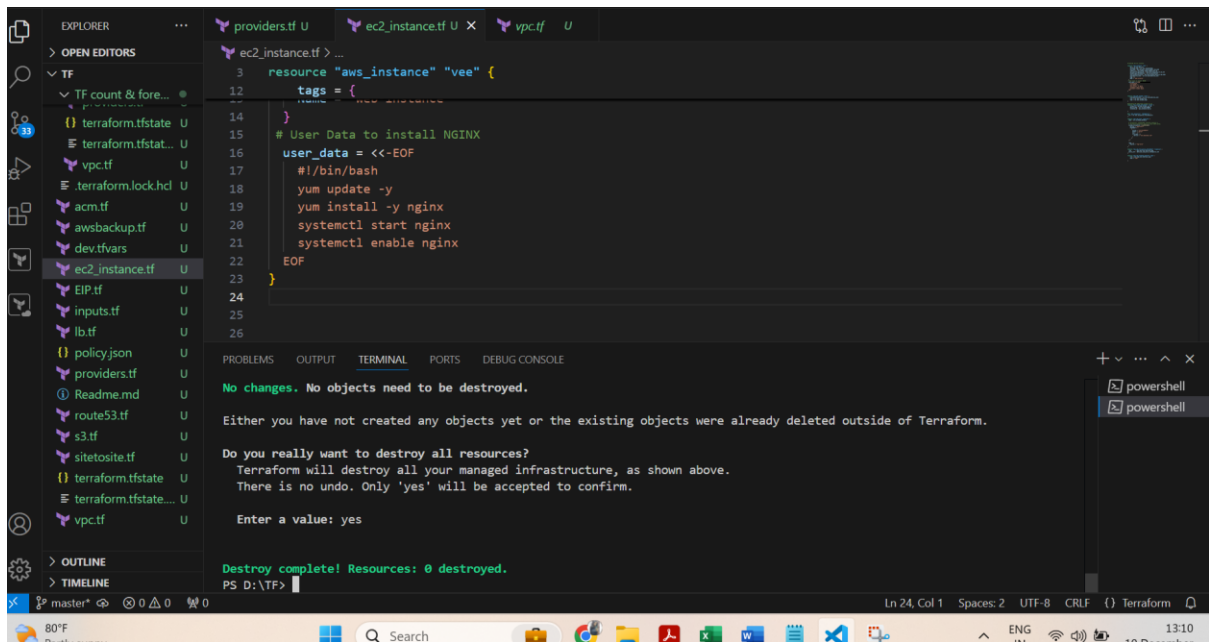
Q Search within code ⚙

Customizable line height

The default line height has been increased for improved accessibility. You can choose to enable a more compact line height from the view settings menu.

Enable compact line heightDismiss

Destroyed sthe resources:



## REPOS:

