Assignment 6 :: We would like to provision the AWS Infra as per the following Conditions:
1. Create 4 Instances each in two different Regions. (us-east-2 & us-west-2)
2. It should have one backend & frontend Instance in each availability zone.
3. If updated, the new frontend instance / server must be up & running before delete / destroying the older once
4. The backend servers should not be deleted or changed.
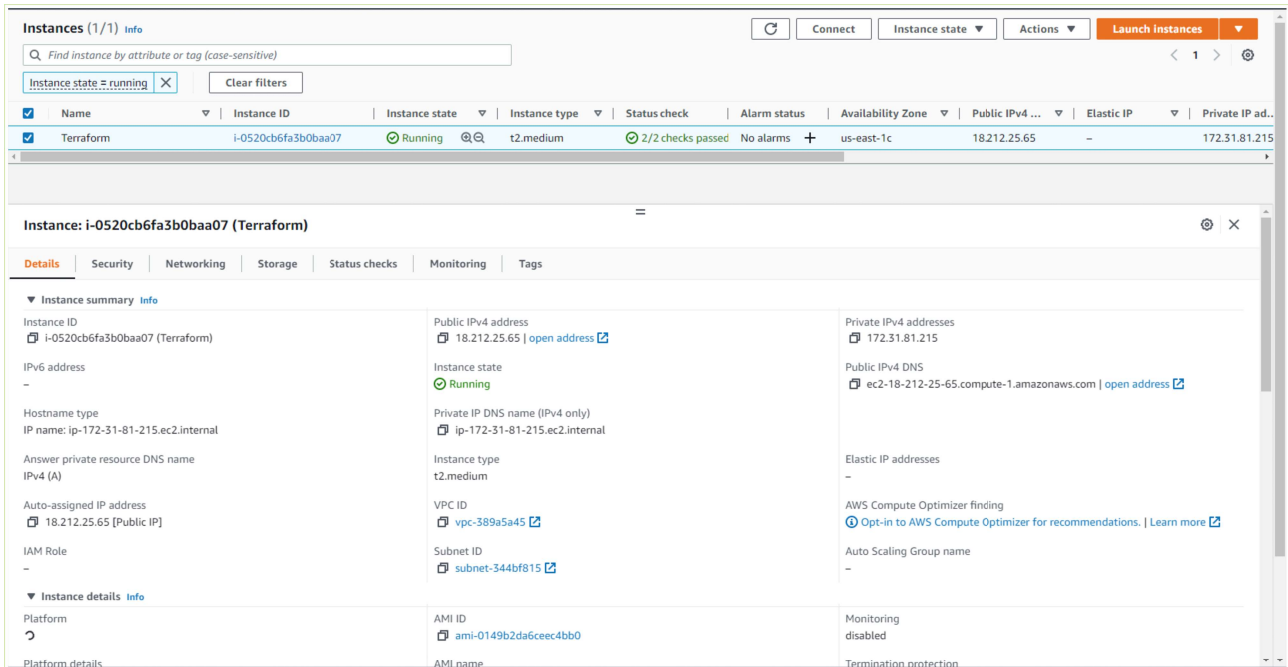5. Display / Output Public IP Address

Table of Contents

Step 1 :: Installation of Terraform

Step 1.1 :: Creation of EC2 Instances

Prepare an EC2 instance as below

Step 1.2 :: Install Terraform

apt update
apt install jq wget unzip -y
wget https://releases.hashicorp.com/terraform/1.3.3/terraform_1.3.3_linux_amd64.zip
unzip terraform_1.3.3_linux_amd64.zip
mv terraform /usr/bin/
chmod +x /usr/bin/terraform
terraform --version

Step 1.3 :: Programmatic permission to User

Goto IAM Dashboard -> User -> Select the user name -> Security credentials -> Create access key

Note :: Kindly save the above access key in csv file

```
# echo "export AWS_ACCESS_KEY_ID="AKIA4YTN4MDXJ6EIGPSH" " >> ~/.bashrc
# echo "export AWS_SECRET_ACCESS_KEY="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" " >>
~/.bashrc
# source ~/.bashrc
# set | grep -i AWS
```

```
root@ip-172-31-81-215:~# set | grep -i AWS
AWS_ACCESS_KEY_ID=AKIA4YTN4MDXJ6EIGPSH
AWS_SECRET_ACCESS_KEY=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
root@ip-172-31-81-215:~#
```

Step 2 :: Creation of main.tf file

vi main.tf

Step 3 :: Results

Step 3.1 :: Result of terraform apply

terraform apply --auto-approve

```
Plan: 8 to add, 0 to change, 0 to destroy.

Changes to Outputs:
  + PublicIP_East_Backend  = [
      + (known after apply),
      + (known after apply),
    ]
  + PublicIP_East_Frontend = [
      + (known after apply),
      + (known after apply),
    ]
aws_instance.east_backend[0]: Creating...
aws_instance.west_backend[1]: Creating...
aws_instance.west_backend[0]: Creating...
aws_instance.east_backend[1]: Creating...
aws_instance.east_backend[0]: Still creating... [10s elapsed]
aws_instance.west_backend[1]: Still creating... [10s elapsed]
aws_instance.west_backend[0]: Still creating... [10s elapsed]
aws_instance.east_backend[1]: Still creating... [10s elapsed]
aws_instance.east_backend[0]: Still creating... [20s elapsed]
aws_instance.west_backend[1]: Still creating... [20s elapsed]
aws_instance.west_backend[0]: Still creating... [20s elapsed]
aws_instance.east_backend[1]: Still creating... [20s elapsed]
aws_instance.east_backend[0]: Still creating... [30s elapsed]
aws_instance.west_backend[1]: Still creating... [30s elapsed]
aws_instance.west_backend[0]: Still creating... [30s elapsed]
aws_instance.east_backend[1]: Still creating... [30s elapsed]
aws_instance.west_backend[1]: Creation complete after 31s [id=i-0f12ecb47a232c4ca]
aws_instance.east_backend[0]: Creation complete after 31s [id=i-03a9bb379bd43f676]
aws_instance.west_backend[0]: Creation complete after 31s [id=i-026e2097824b953c8]
aws_instance.west_frontend[0]: Creating...
aws_instance.west_frontend[1]: Creating...
aws_instance.east_backend[1]: Still creating... [40s elapsed]
aws_instance.east_backend[1]: Creation complete after 41s [id=i-022e9da2de779c0e1]
aws_instance.east_frontend[0]: Creating...
aws_instance.east_frontend[1]: Creating...
aws_instance.west_frontend[0]: Still creating... [10s elapsed]
aws_instance.west_frontend[1]: Still creating... [10s elapsed]
aws_instance.east_frontend[0]: Still creating... [10s elapsed]
aws_instance.east_frontend[1]: Still creating... [10s elapsed]
aws_instance.west_frontend[0]: Still creating... [20s elapsed]
aws_instance.west_frontend[1]: Still creating... [20s elapsed]
aws_instance.east_frontend[0]: Still creating... [20s elapsed]
aws_instance.east_frontend[1]: Still creating... [20s elapsed]
aws_instance.west_frontend[0]: Still creating... [30s elapsed]
aws_instance.west_frontend[1]: Still creating... [30s elapsed]
aws_instance.east_frontend[0]: Still creating... [30s elapsed]
aws_instance.east_frontend[1]: Still creating... [30s elapsed]
aws_instance.west_frontend[0]: Still creating... [40s elapsed]
aws_instance.west_frontend[1]: Still creating... [40s elapsed]
aws_instance.east_frontend[1]: Creation complete after 32s [id=i-0cc0cae99faeebc44]
aws_instance.west_frontend[1]: Creation complete after 42s [id=i-0ed298e0f776c0a94]
aws_instance.east_frontend[0]: Still creating... [40s elapsed]
aws_instance.west_frontend[0]: Still creating... [50s elapsed]
aws_instance.west_frontend[0]: Creation complete after 52s [id=i-061415ca8d2bcf882]
aws_instance.east_frontend[0]: Creation complete after 43s [id=i-02d8d4a85a5636e12]

Apply complete! Resources: 8 added, 0 changed, 0 destroyed.

Outputs:

PublicIP_East_Backend = [
  "34.228.241.127",
  "44.203.211.255",
]
PublicIP_East_Frontend = [
  "3.85.49.1",
  "44.204.114.52",
]
root@ip-172-31-81-215:~/assignment#
```

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone ▲	Public IPv4 ...	Elastic IP	Private IP ad...
☐	east-front-0	i-02d8d4a85a5636e12	⊘ Running ⊕⊖	t2.micro	⊘ Initializing	No alarms ＋	us-east-1a	3.85.49.1	–	172.31.43.244
☐	east-back-0	i-03a9bb379bd43f676	⊘ Running ⊕⊖	t2.micro	⊘ Initializing	No alarms ＋	us-east-1a	34.228.241.127	–	172.31.39.90
☐	east-back-1	i-022e9da2de779c0e1	⊘ Running ⊕⊖	t2.micro	⊘ Initializing	No alarms ＋	us-east-1b	44.203.211.255	–	172.31.13.84
☐	east-front-1	i-0cc0cae99faeebc44	⊘ Running ⊕⊖	t2.micro	⊘ Initializing	No alarms ＋	us-east-1b	44.204.114.52	–	172.31.0.92
☐	Terraform	i-0520cb6fa3b0baa07	⊘ Running ⊕⊖	t2.medium	⊘ 2/2 checks passed	No alarms ＋	us-east-1c	18.212.25.65	–	172.31.81.215
☐	west-front-0	i-061415ca8d2bcf882	⊘ Running ⊕⊖	t2.micro	⊘ Initializing	No alarms ＋	us-east-1c	3.87.217.60	–	172.31.90.251
☐	west-back-0	i-026e2097824b953c8	⊘ Running ⊕⊖	t2.micro	⊘ Initializing	No alarms ＋	us-east-1c	54.165.21.162	–	172.31.88.65
☐	west-back-1	i-0f12ecb47a232c4ca	⊘ Running ⊕⊖	t2.micro	⊘ Initializing	No alarms ＋	us-east-1d	54.226.145.54	–	172.31.23.117
☐	west-front-1	i-0ed298e0f776c0a94	⊘ Running ⊕⊖	t2.micro	⊘ Initializing	No alarms ＋	us-east-1d	54.173.38.174	–	172.31.21.208

Step 3.2 :: Result of terraform destroy

terraform destroy --auto-approve

```
Plan: 0 to add, 0 to change, 8 to destroy.

Changes to Outputs:
  - PublicIP_East_Backend  = [
      - "34.228.241.127",
      - "44.203.211.255",
    ] → null
  - PublicIP_East_Frontend = [
      - "3.85.49.1",
      - "44.204.114.52",
    ] → null
aws_instance.east_frontend[1]: Destroying ... [id=i-0cc0cae99faeebc44]
aws_instance.east_frontend[0]: Destroying ... [id=i-02d8d4a85a5636e12]
aws_instance.west_frontend[0]: Destroying ... [id=i-061415ca8d2bcf882]
aws_instance.west_frontend[1]: Destroying ... [id=i-0ed298e0f776c0a94]
aws_instance.east_frontend[1]: Still destroying ... [id=i-0cc0cae99faeebc44, 10s elapsed]
aws_instance.east_frontend[0]: Still destroying ... [id=i-02d8d4a85a5636e12, 10s elapsed]
aws_instance.west_frontend[0]: Still destroying ... [id=i-061415ca8d2bcf882, 10s elapsed]
aws_instance.west_frontend[1]: Still destroying ... [id=i-0ed298e0f776c0a94, 10s elapsed]
aws_instance.east_frontend[1]: Still destroying ... [id=i-0cc0cae99faeebc44, 20s elapsed]
aws_instance.west_frontend[0]: Still destroying ... [id=i-061415ca8d2bcf882, 20s elapsed]
aws_instance.east_frontend[0]: Still destroying ... [id=i-02d8d4a85a5636e12, 20s elapsed]
aws_instance.west_frontend[1]: Still destroying ... [id=i-0ed298e0f776c0a94, 20s elapsed]
aws_instance.east_frontend[0]: Destruction complete after 30s
aws_instance.west_frontend[0]: Destruction complete after 30s
aws_instance.east_frontend[1]: Still destroying ... [id=i-0cc0cae99faeebc44, 30s elapsed]
aws_instance.west_frontend[1]: Still destroying ... [id=i-0ed298e0f776c0a94, 30s elapsed]
aws_instance.west_frontend[1]: Destruction complete after 40s
aws_instance.west_backend[1]: Destroying ... [id=i-0f12ecb47a232c4ca]
aws_instance.west_backend[0]: Destroying ... [id=i-026e2097824b953c8]
aws_instance.east_frontend[1]: Destruction complete after 40s
aws_instance.east_backend[1]: Destroying ... [id=i-022e9da2de779c0e1]
aws_instance.east_backend[0]: Destroying ... [id=i-03a9bb379bd43f676]
aws_instance.west_backend[0]: Still destroying ... [id=i-026e2097824b953c8, 10s elapsed]
aws_instance.west_backend[1]: Still destroying ... [id=i-0f12ecb47a232c4ca, 10s elapsed]
aws_instance.east_backend[1]: Still destroying ... [id=i-022e9da2de779c0e1, 10s elapsed]
aws_instance.east_backend[0]: Still destroying ... [id=i-03a9bb379bd43f676, 10s elapsed]
aws_instance.west_backend[1]: Still destroying ... [id=i-0f12ecb47a232c4ca, 20s elapsed]
aws_instance.west_backend[0]: Still destroying ... [id=i-026e2097824b953c8, 20s elapsed]
aws_instance.east_backend[1]: Still destroying ... [id=i-022e9da2de779c0e1, 20s elapsed]
aws_instance.east_backend[0]: Still destroying ... [id=i-03a9bb379bd43f676, 20s elapsed]
aws_instance.east_backend[1]: Destruction complete after 30s
aws_instance.west_backend[1]: Destruction complete after 30s
aws_instance.west_backend[0]: Destruction complete after 30s
aws_instance.east_backend[0]: Destruction complete after 30s

Destroy complete! Resources: 8 destroyed.
root@ip-172-31-81-215:~/assignment#
```

Instances (1) Info

Connect | Instance state ▼ | Actions ▼ | **Launch instances** ▼

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🔍 *Find instance by attribute or tag (case-sensitive)*

Instance state = running ✕ | Clear filters

	Name	Instance ID	Instance state ▽	Instance type ▽	Status check	Alarm status	Availability Zone ▲	Public IPv4 ... ▽	Elastic IP ▽	Private IP ad..
☐	Terraform	i-0520cb6fa3b0baa07	⊘ Running ⊕⊖	t2.medium	⊘ 2/2 checks passed	No alarms ＋	us-east-1c	18.212.25.65	–	172.31.81.215