Summary

1) Prepare the infrastructure to install Jenkins

Create an EC2 machine (AMI=ubuntu) with 4 GB RAM and 15 HDD

Create an IAM role with AdministratorAccess Policy

Attach this role to EC2 machine

- Install AWS client

sudo apt-get install awscli on master and node1

- Install Docker

sudo apt-get update

---sudo apt-get install -y lsb-release software-properties-common

-- curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /usr/share/keyrings/docker-archive-keyring.gpg

---- echo "deb [arch=$(dpkg --print-architecture) signed-by=/usr/share/keyrings/docker-archive-keyring.gpg] https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null

--- sudo apt-get update -y

---- sudo apt-get install -y docker-ce docker-ce-cli containerd.io

Changing Docker Cgroup Driver

```
cat <<EOF | sudo tee /etc/docker/daemon.json
{ "exec-opts": ["native.cgroupdriver=systemd"],
"log-driver": "json-file",
"log-opts": {
        "max-size": "100m"
        },
"storage-driver": "overlay2"
}
EOF

sudo systemctl enable docker
sudo systemctl daemon-reload
sudo systemctl restart docker
```

----------sudo apt-get update

- Install Kubectl

```
sudo apt-get install -y apt-transport-https ca-certificates curl

sudo curl -fsSLo /usr/share/keyrings/kubernetes-archive-keyring.gpg https://packages.cloud.google.com/apt/doc/apt-key.gpg

echo "deb [signed-by=/usr/share/keyrings/kubernetes-archive-keyring.gpg] https://apt.kubernetes.io/ kubernetes-xenial main" | sudo tee /etc/apt/sources.list.d/kubernetes.list

sudo apt-get update
```

sudo apt-get install -y kubectl

sudo rm /etc/containerd/config.toml

sudo systemctl restart containerd

sudo swapoff -a

Install Jenkins

sudo apt install default-jdk

sudo mkdir -p /usr/share/keyrings

curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io.key | sudo tee /usr/share/keyrings/jenkins-keyring.asc > /dev/null

Enable Jenkins

echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \

https://pkg.jenkins.io/debian-stable binary/ | sudo tee /etc/apt/sources.list.d/jenkins.list > /dev/null

sudo apt-get update

sudo apt-get install jenkins

systemctl status jenkins --no-pager -l

sudo systemctl enable --now jenkins

sudo ufw allow 8080

sudo cat /var/lib/jenkins/secrets/initialAdminPassword

Copy password and paste to Jenkins console after launched the Jenkins app via a browser

- Add user to Docker group

$ sudo groupadd docker

$ sudo usermod -a -G docker $USER

change rigth on file docker
sudo chmod 777 /var/run/docker.sock

- Binary Terraform

binary

wget https://releases.hashicorp.com/terraform/1.2.5/terraform_1.2.5_linux_amd64.zip

unzip

mv terraform /usr/bin/

sudo mv terraform /usr/bin

which terraform

2) Install Plugin and configure them on Jenkins

Plugins

Docker

Docker Pipeline

Terraform

Kubernetes CLI

Configuration of Terraform on Jenkins

Go to Global Tool Configuration

And click on Terraform to add this path : “/usr/bin/” and click on save

Create Pipeline to automate eks cluster and deploy application on it

In my Demo I create 2 pipelines

One to automate build image and push image to ECR

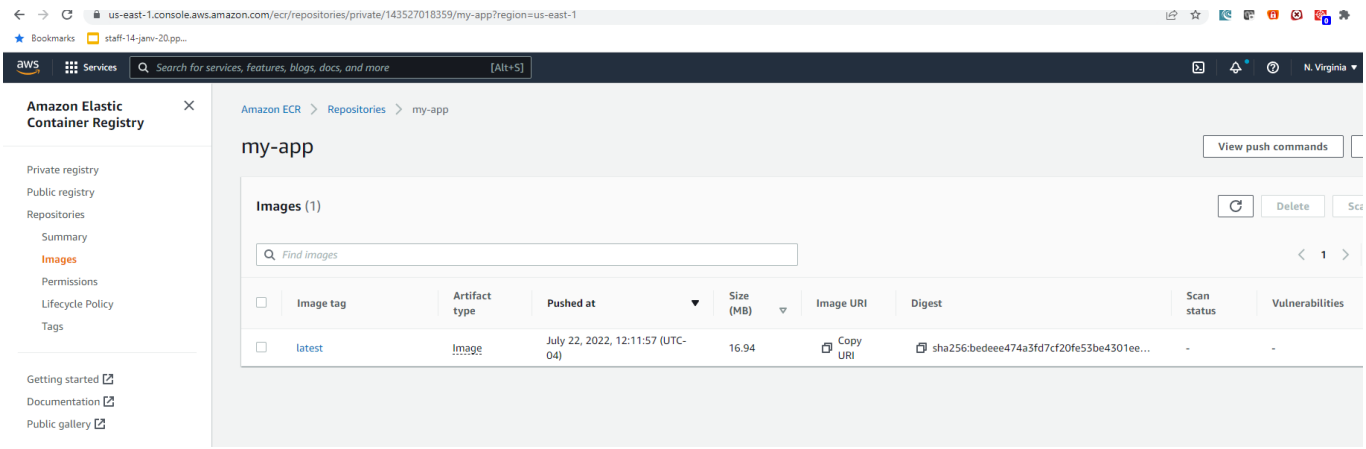
The second pipeline to create EKS cluster with one node and after to deploy image on ECR to EKS with YAML file for kubernetes

1) Pipeline 1

```
pipeline {
  agent any

  environment {

    registry = "143527018359.dkr.ecr.us-east-1.amazonaws.com/my-app"
  }

  stages {
    stage('Checkout') {
```

```
    steps {
        checkout([$class: 'GitSCM', branches: [[name: '*/main']], extensions: [], userRemoteConfigs: [[url: 'https://github.com/asejour/genspark-sre-training/']]])
    }
}

stage('build image') {
    steps{
        script{
            docker.build registry
        }
    }

}

stage('test') {

    steps{

        echo "Ok continue---Emppty"
    }

}

stage('Login Docker image to ecr') {
    steps{
        sh "aws ecr get-login-password --region us-east-1 | docker login --username AWS --password-stdin 143527018359.dkr.ecr.us-east-1.amazonaws.com"
```

```
        }
    }

    stage('Push Docker image to ecr') {
        steps{
            sh "docker push 143527018359.dkr.ecr.us-east-1.amazonaws.com/my-app:latest"

        }
    }

  }
}
```



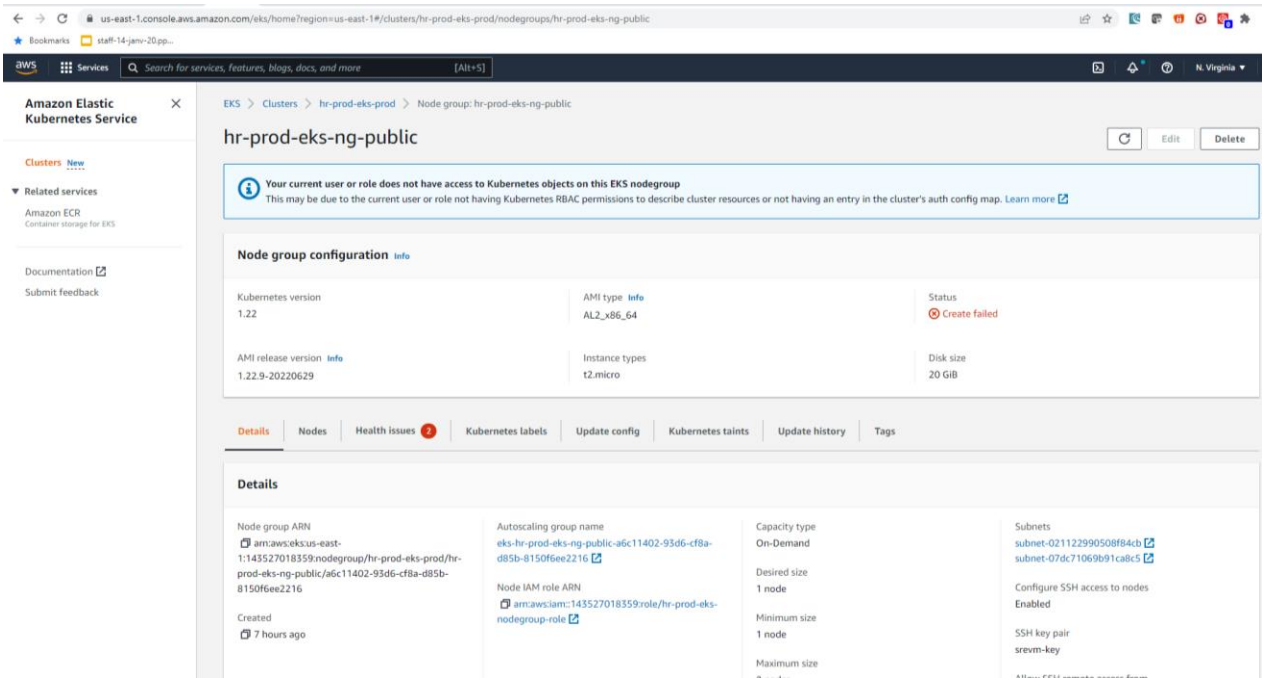
2) Pipeline 2

```
pipeline {
  agent any

  tools {
 terraform 'Terraform-11'
```

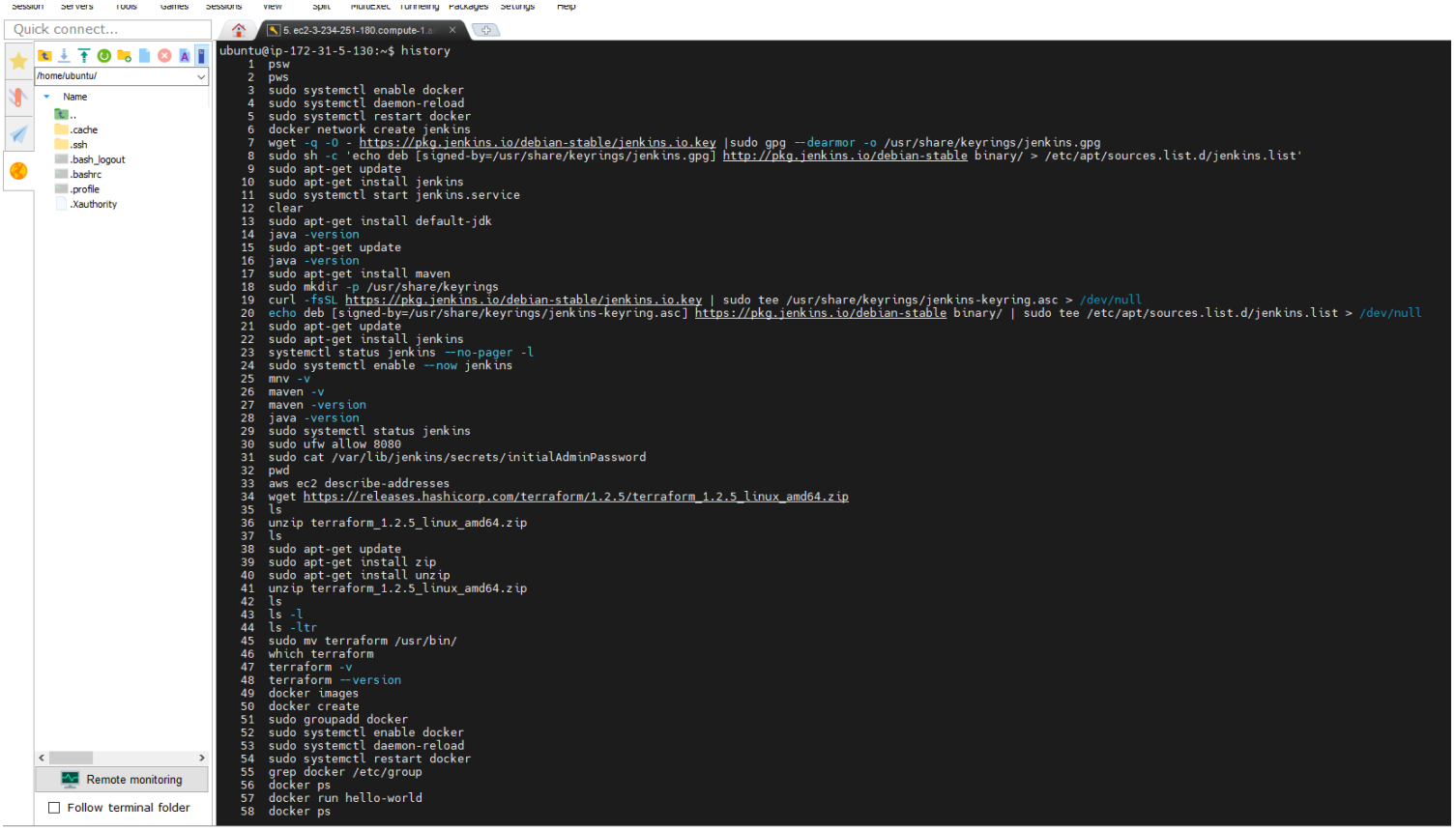
```
}
stages{
    stage('Checkout') {
        steps {
            checkout([$class: 'GitSCM', branches: [[name: '*/main']], extensions: [], userRemoteConfigs: [[url: 'https://github.com/asejour/adomaa-amos']]])

        }
    }

    stage('Launch init terraform'){

        steps{

            sh "terraform init"

        }
    }

    stage('Launch plan terraform'){

        steps{

            sh "terraform plan"

        }
    }

    stage('Launch apply terraform'){
```

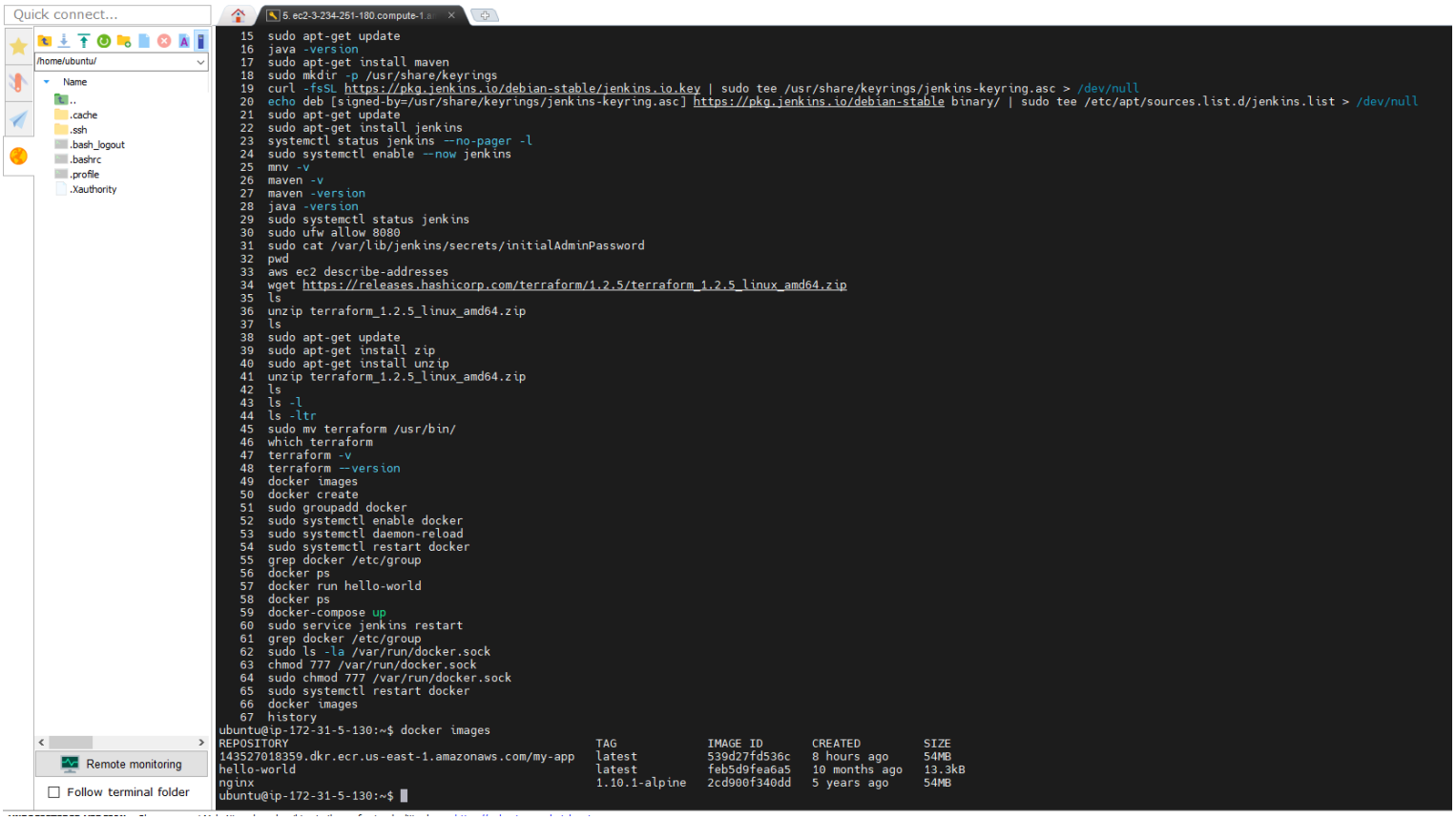
```
        steps{

            sh "terraform apply --auto-approve"

        }
    }


  }
}
```

I got this error for the Node creation : `AsgInstanceLaunchFailures: You've reached your quota for maximum Fleet Requests for this account. Launching EC2 instance failed.`



History on Ubuntu




Quick connect...
5. ec2-3-234-251-180.compute-1.a
/home/ubuntu/
Name
..
.cache
.ssh
.bash_logout
.bashrc
.profile
.Xauthority
Remote monitoring
Follow terminal folder
15 sudo apt-get update
16 java -version
17 sudo apt-get install maven
18 sudo mkdir -p /usr/share/keyrings
19 curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io.key | sudo tee /usr/share/keyrings/jenkins-keyring.asc > /dev/null
20 echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] https://pkg.jenkins.io/debian-stable binary/ | sudo tee /etc/apt/sources.list.d/jenkins.list > /dev/null
21 sudo apt-get update
22 sudo apt-get install jenkins
23 systemctl status jenkins --no-pager -l
24 sudo systemctl enable --now jenkins
25 mnv -v
26 maven -v
27 maven -version
28 java -version
29 sudo systemctl status jenkins
30 sudo ufw allow 8080
31 sudo cat /var/lib/jenkins/secrets/initialAdminPassword
32 pwd
33 aws ec2 describe-addresses
34 wget https://releases.hashicorp.com/terraform/1.2.5/terraform_1.2.5_linux_amd64.zip
35 ls
36 unzip terraform_1.2.5_linux_amd64.zip
37 ls
38 sudo apt-get update
39 sudo apt-get install zip
40 sudo apt-get install unzip
41 unzip terraform_1.2.5_linux_amd64.zip
42 ls
43 ls -l
44 ls -ltr
45 sudo mv terraform /usr/bin/
46 which terraform
47 terraform -v
48 terraform --version
49 docker images
50 docker create
51 sudo groupadd docker
52 sudo systemctl enable docker
53 sudo systemctl daemon-reload
54 sudo systemctl restart docker
55 grep docker /etc/group
56 docker ps
57 docker run hello-world
58 docker ps
59 docker-compose up
60 sudo service jenkins restart
61 grep docker /etc/group
62 sudo ls -la /var/run/docker.sock
63 chmod 777 /var/run/docker.sock
64 sudo chmod 777 /var/run/docker.sock
65 sudo systemctl restart docker
66 docker images
67 history
ubuntu@ip-172-31-5-130:~$ docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
143527018359.dkr.ecr.us-east-1.amazonaws.com/my-app latest 539d27fd536c 8 hours ago 54MB
hello-world latest feb5d9fea6a5 10 months ago 13.3kB
nginx 1.10.1-alpine 2cd900f340dd 5 years ago 54MB
ubuntu@ip-172-31-5-130:~$