**Deploy applications on AWS EKS**

[**1.** **Prerequisites** 2](#_Toc175382151)

[**2.** **Setup infrastructure with Terraform** 2](#_Toc175382152)

[**2.1. Set up AWS credential configure** 2](#_Toc175382153)

[**2.2. Initialize the module** 2](#_Toc175382154)

[**2.3. Verify the terraform plan** 4](#_Toc175382155)

[**2.3.1. Verify Cluster using kubectl** 4](#_Toc175382156)

[**2.3.2. Verify on AWS UI** 4](#_Toc175382157)

[**3.** **Setup Jenkins server with Terraform** 7](#_Toc175382158)

[**3.1. Initialize the module** 7](#_Toc175382159)

[**3.2. Verify the terraform plan** 8](#_Toc175382160)

[**3.3 Setup Jenkins account** 9](#_Toc175382161)

[**4.** **Push docker images to AWS ACR** 10](#_Toc175382162)

1. **Prerequisites**

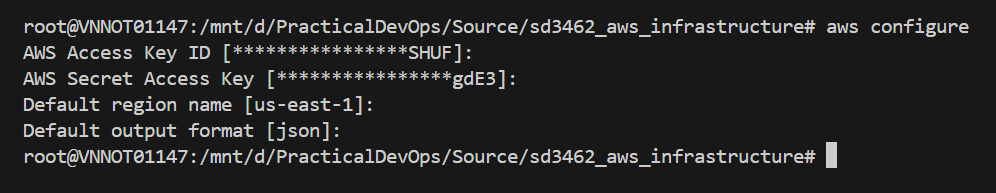
* AWS account (IAM user)
* Terraform
* Docker
* Kubectl
* Eksctl
* Helm

1. **Setup infrastructure with Terraform**

**2.1. Set up AWS credential configure**

**-** Run the command to set up your AWS CLI: aws configure

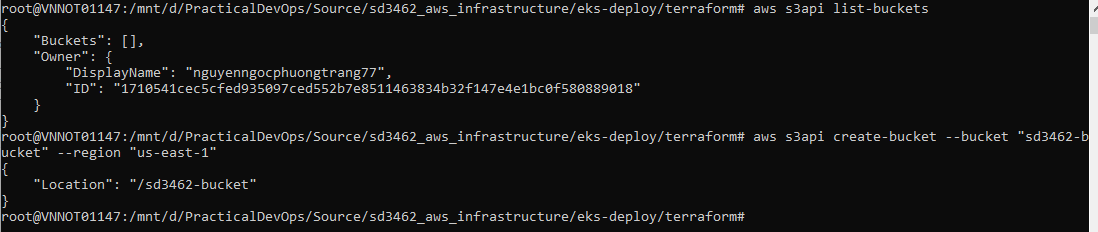
**-** Enter the access key of your IAM account, if you already configured press enter.

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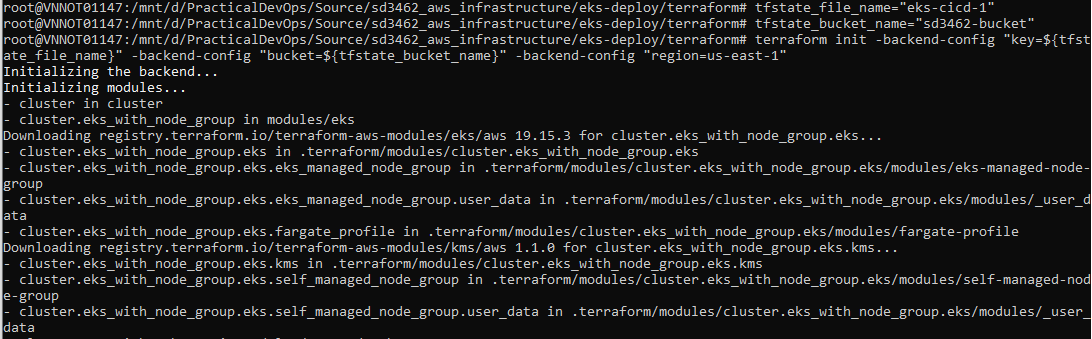
**2.2. Initialize the module**

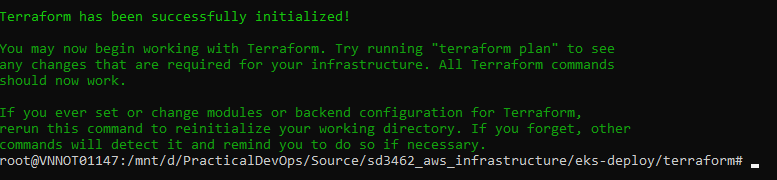
**-** Move to the **“./eks-deploy/terraform”** directory to perform commands.

**-** Create the s3 bucket to store the *tfstate* file.

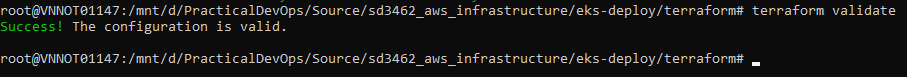


**-** Run the command terraform init -backend-config "key=${tfstate\_file\_name}" -backend-config "bucket=${tfstate\_bucket\_name}" -backend-config "region=us-east-1" to initializing the backend.

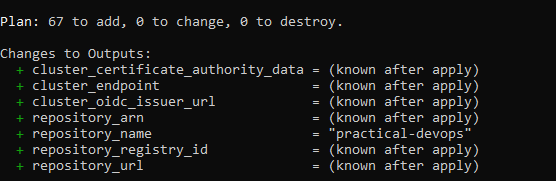




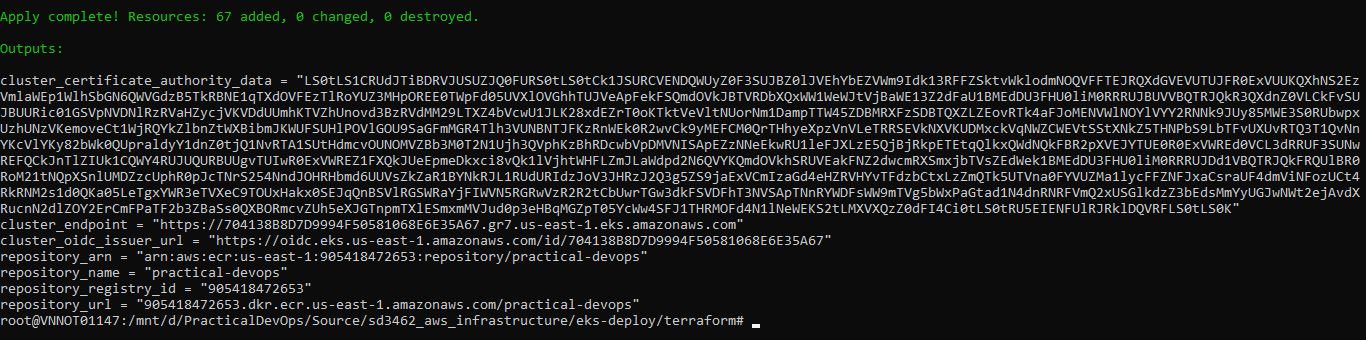
**-** After successfully initializing, run terraform validate to check whether the configuration is valid to ensure no issue when applying the terraform plan.



**-** Run terraform plan -var-file=”dev.tfvars” to apply the execution plan.



- Run terraform apply –var-file=”dev.tfvars” to create all the resource.



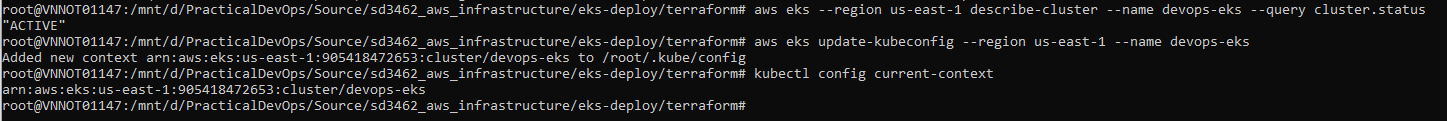
**2.3. Verify the terraform plan**

**2.3.1. Verify Cluster using kubectl**

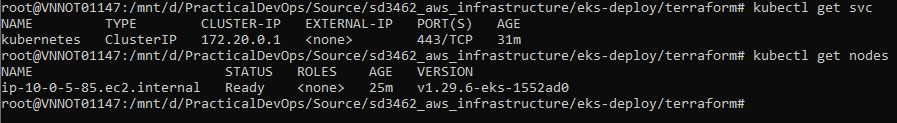
- Check status of the Cluster aws eks --region us-east-1 describe-cluster --name deops-eks --query cluster.status.

- Configure kubectl with EKS API server credentials aws eks update-kubeconfig --region us-east-1 --name devops-eks.

- Check if you are pointing to the right kubernetes cluster kubectl config current-context

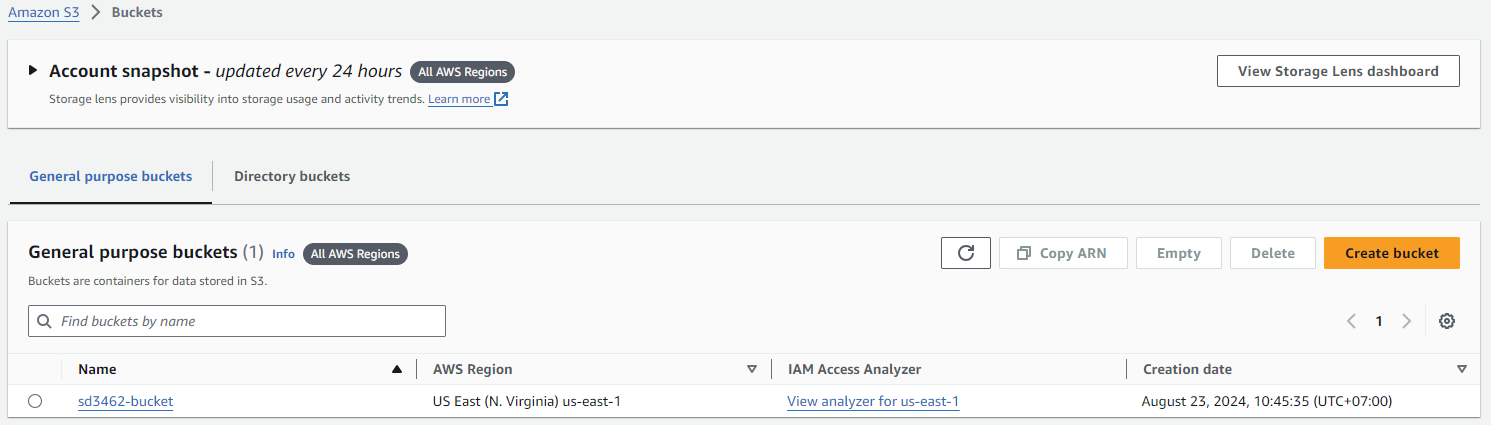


- Validate kubectl configuration master node.

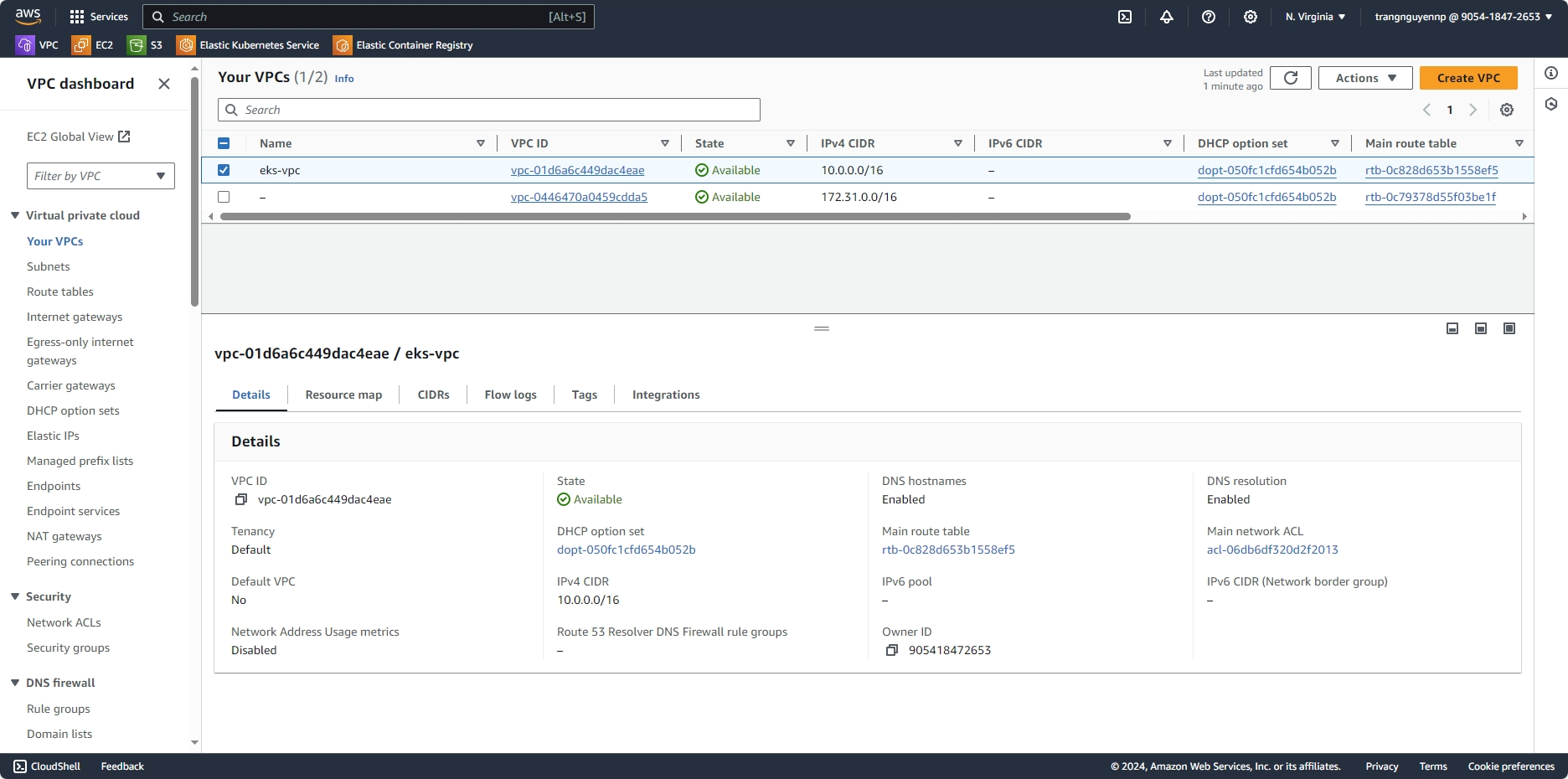


**2.3.2. Verify on AWS UI**

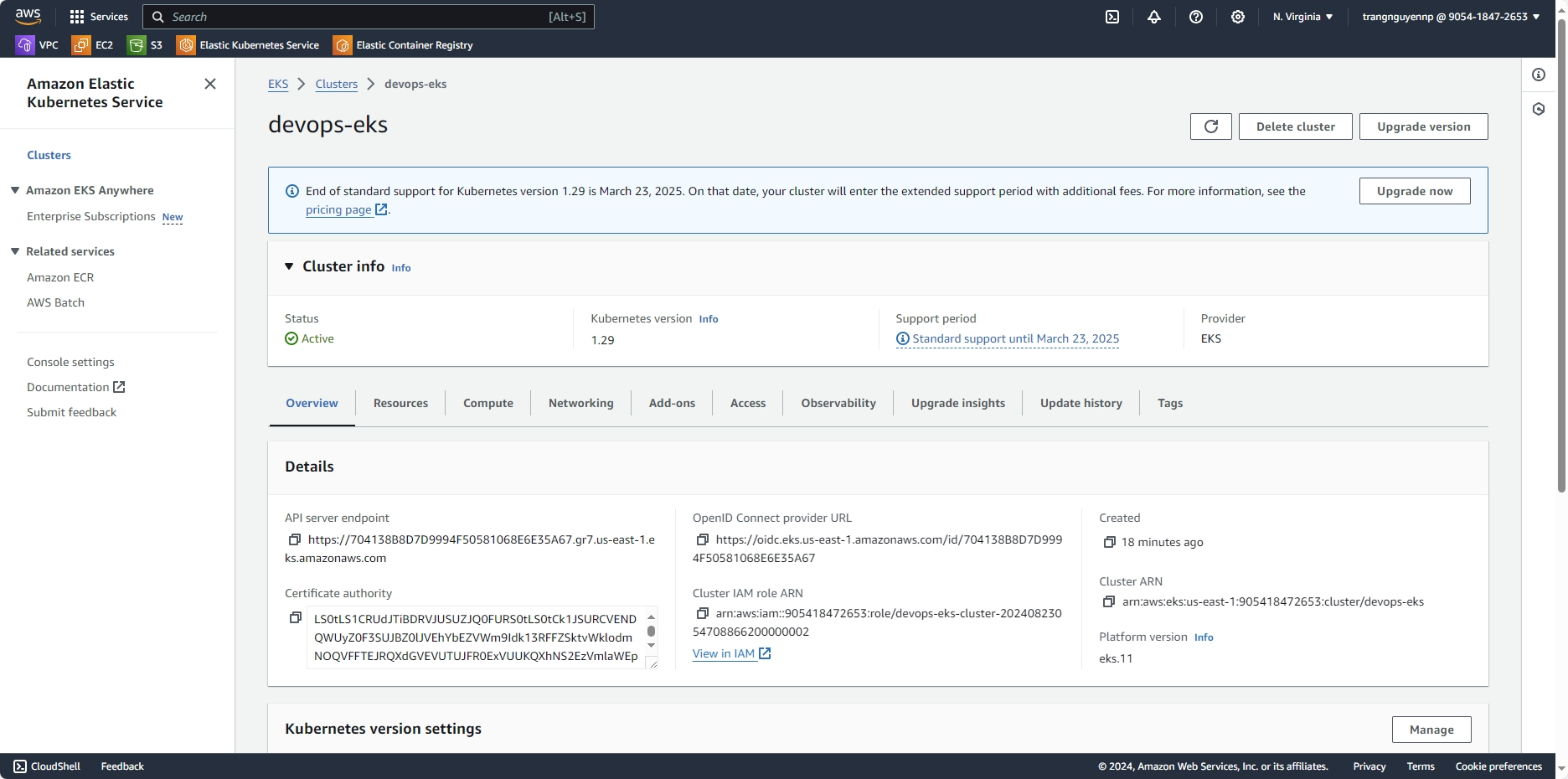
* S3 bucket.



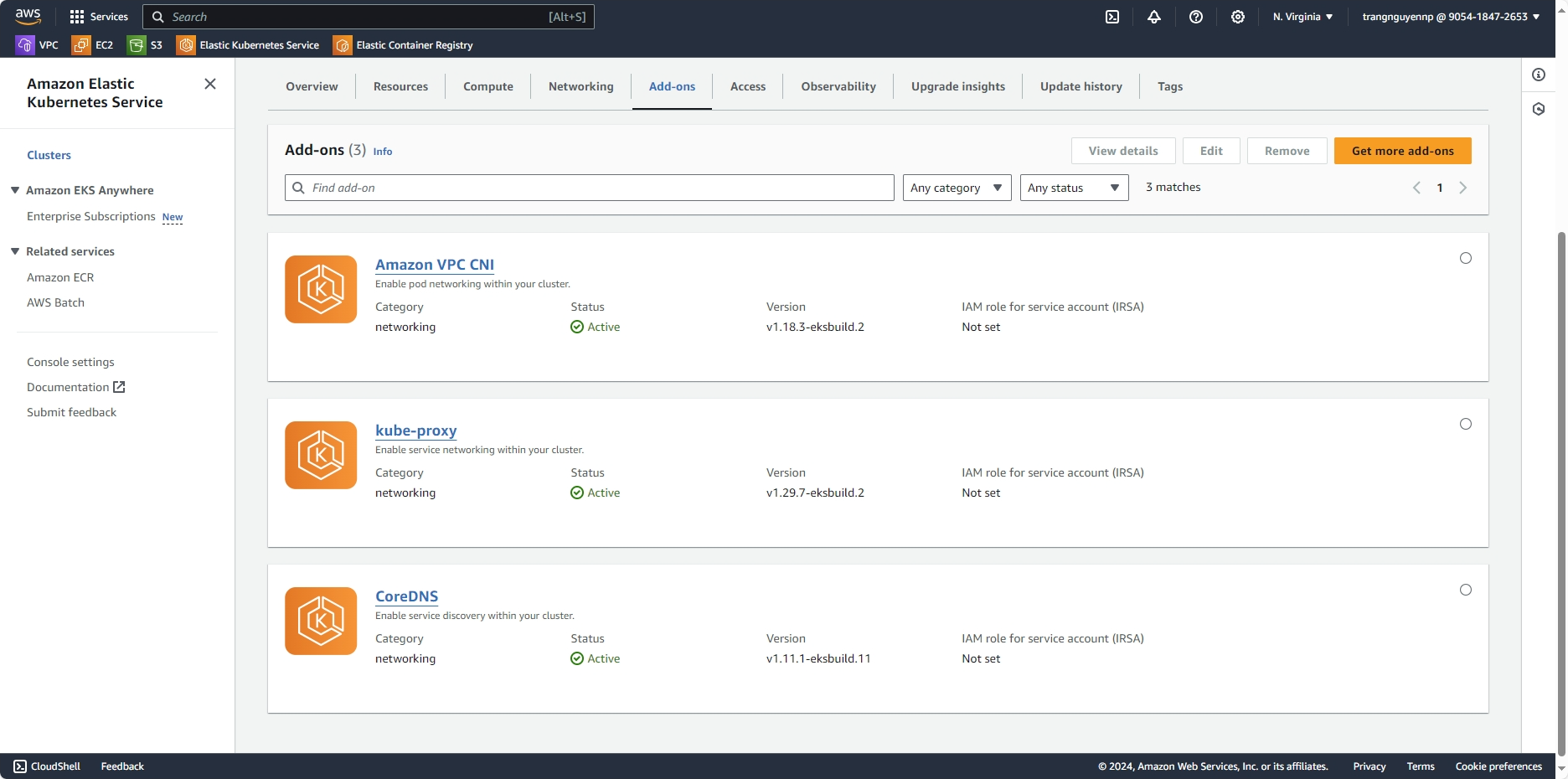
* Virtual private cloud.



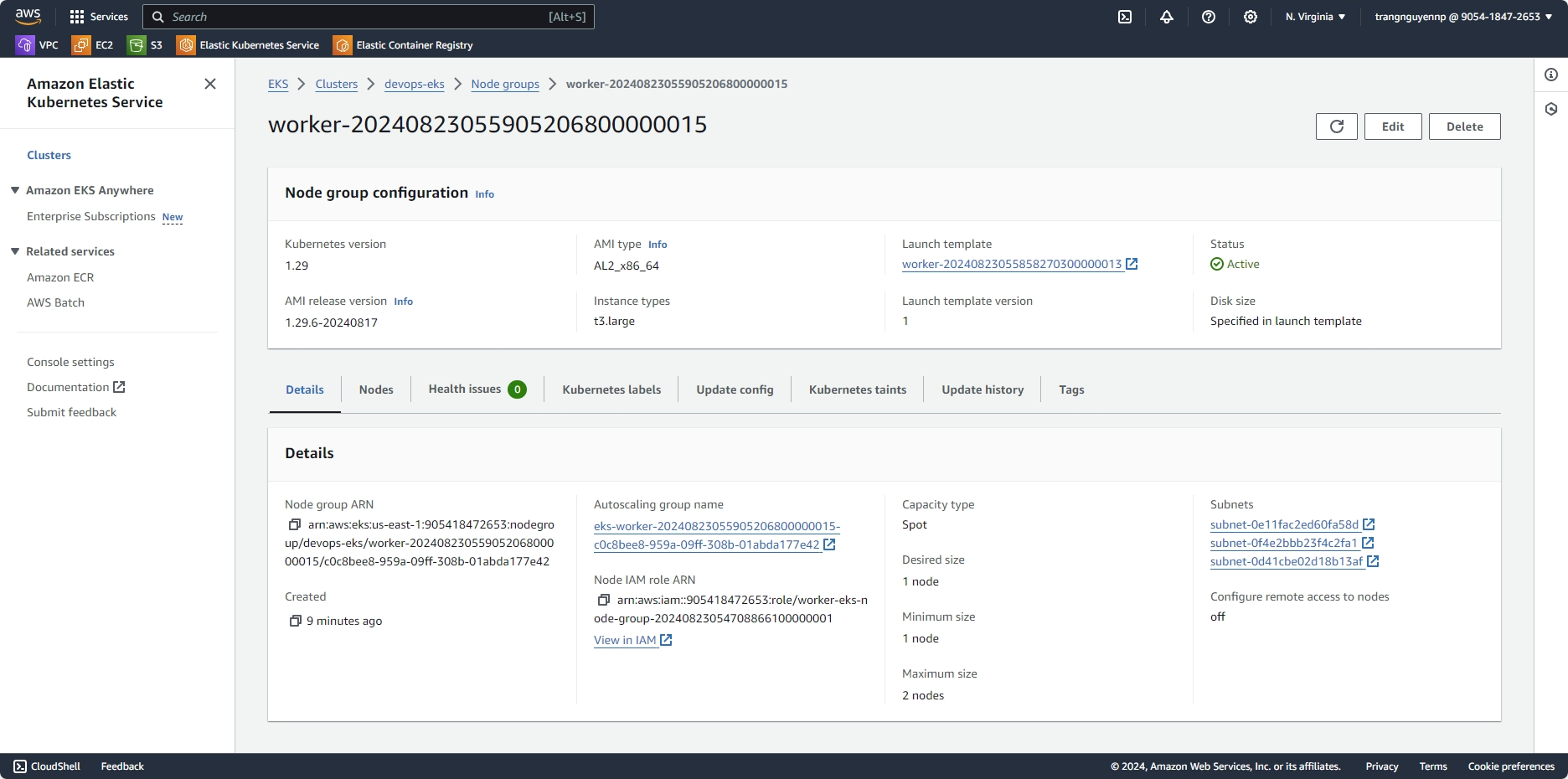
* EKS Cluster with OIDC Provider.



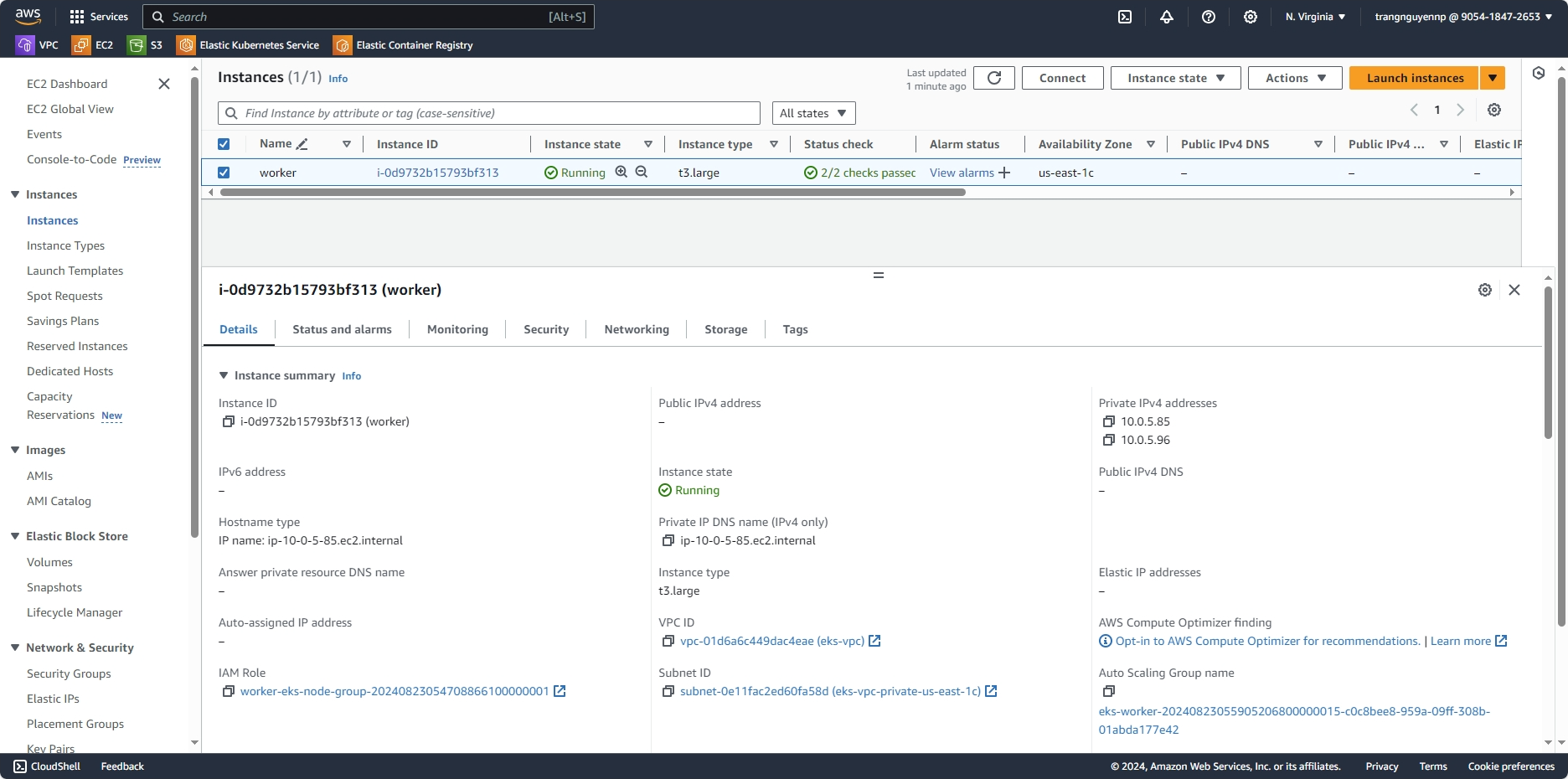
* EKS Managed AddOns.



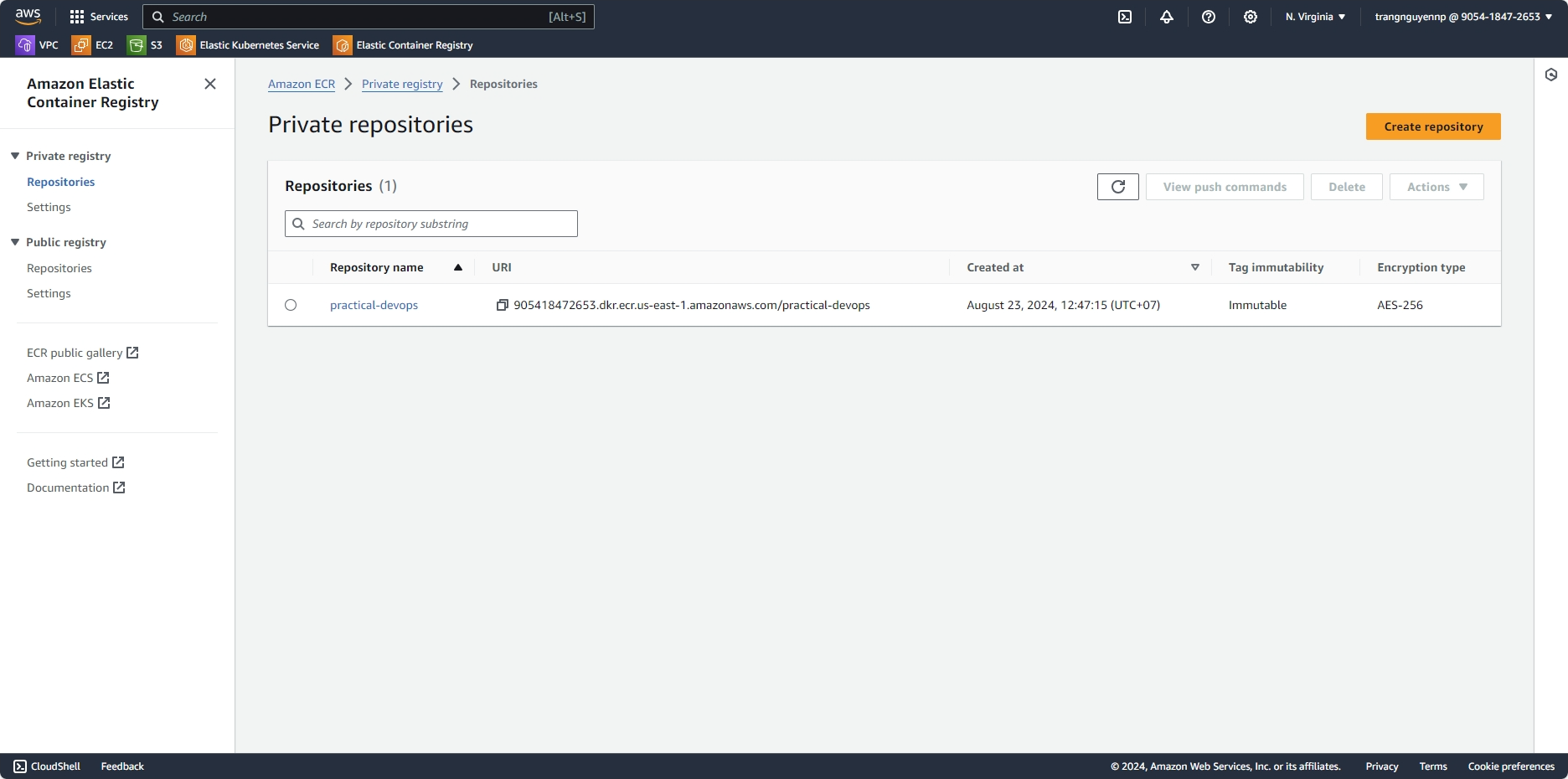
* EKS Managed node group.



* EC2: worker nodes



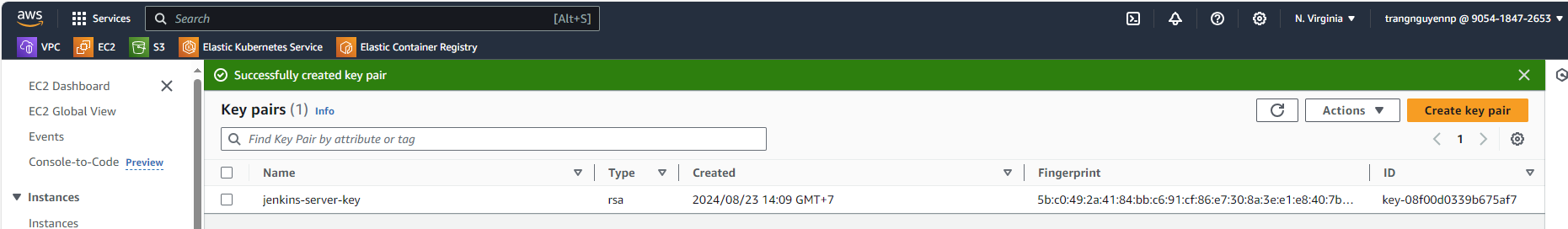
* ECR repositories



# **Setup Jenkins server with Terraform**

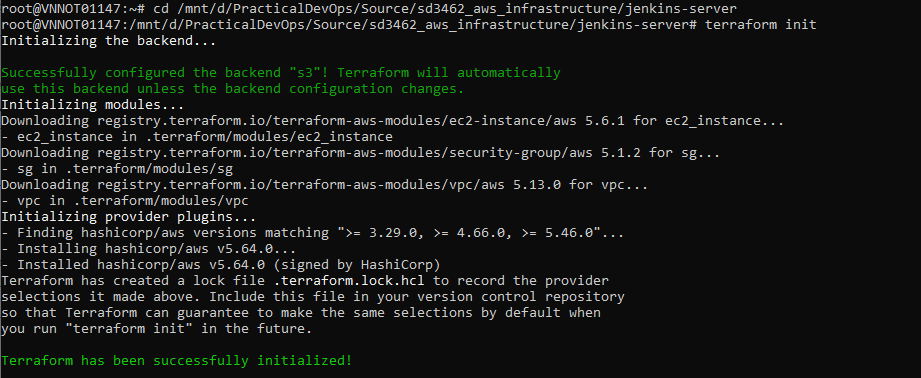
## **3.1. Initialize the module**

- Go to AWS UI page, create new key pair name **“jenkins-server-key”** in EC2 page.

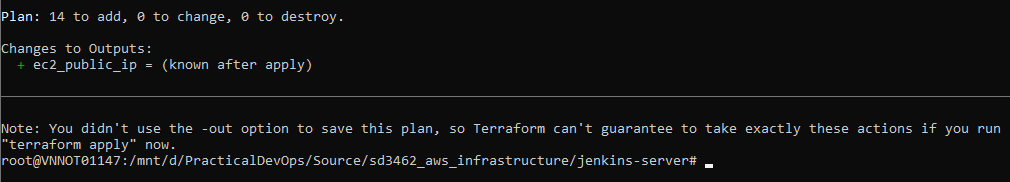


- Move to the **“./jenkins-server”** directory to perform commands.

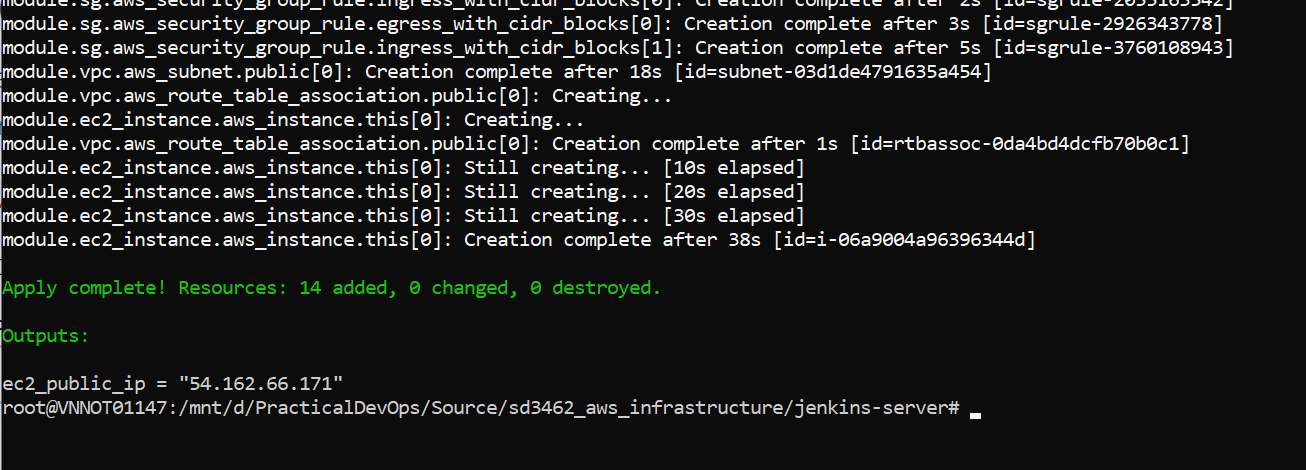
- Run the command terraform init to initialize backend.



- After successfully initializing, run terraform validate to check whether the configuration is valid to ensure no issue when applying the terraform plan.

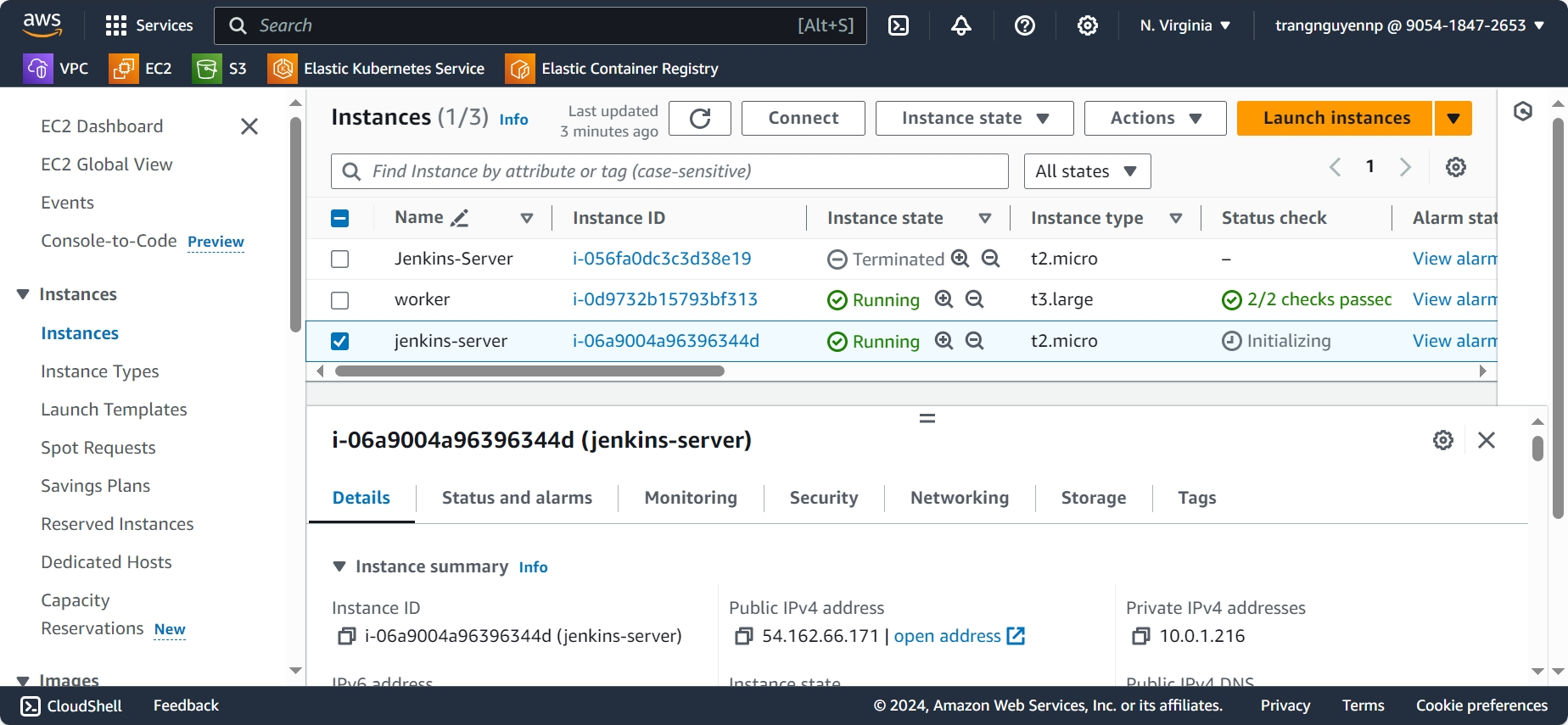
- Run terraform plan -var-file=”dev.tfvars” to apply the execution plan.

- Run terraform apply -var-file=”dev.tfvars” to create all the resource.

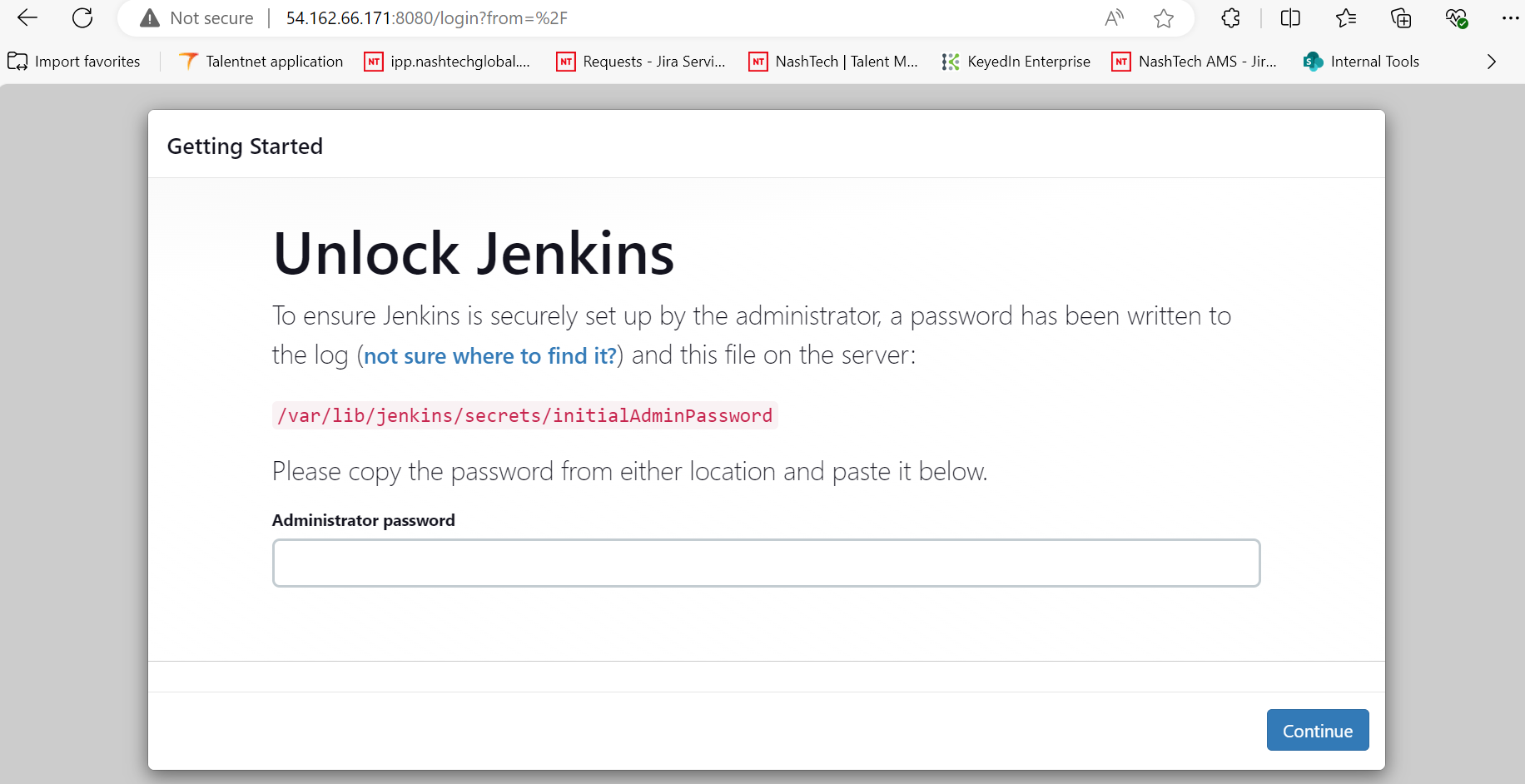


## **3.2. Verify the terraform plan**

- On EC2 page you will see the **jenkins-server** instance created.

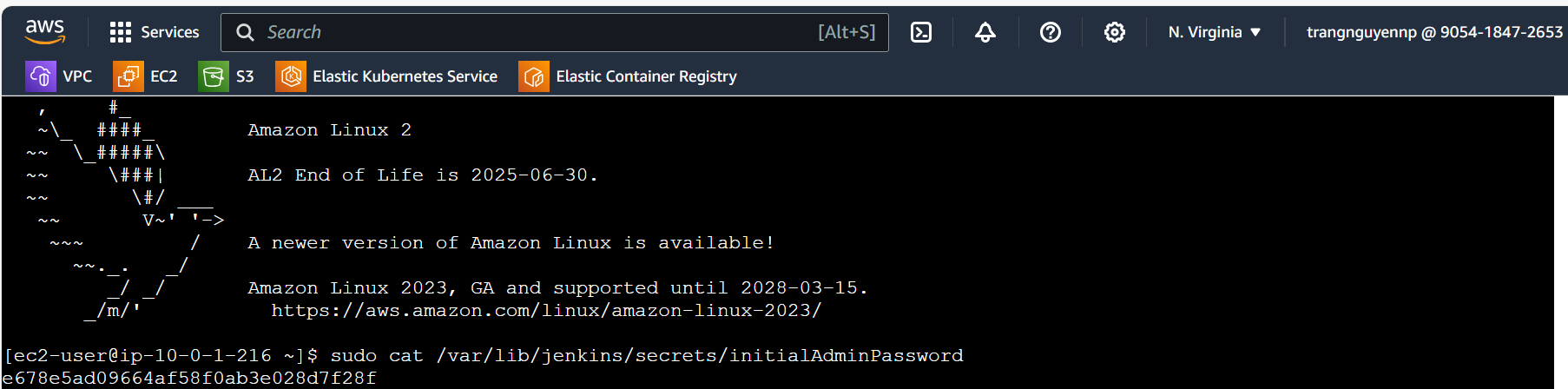


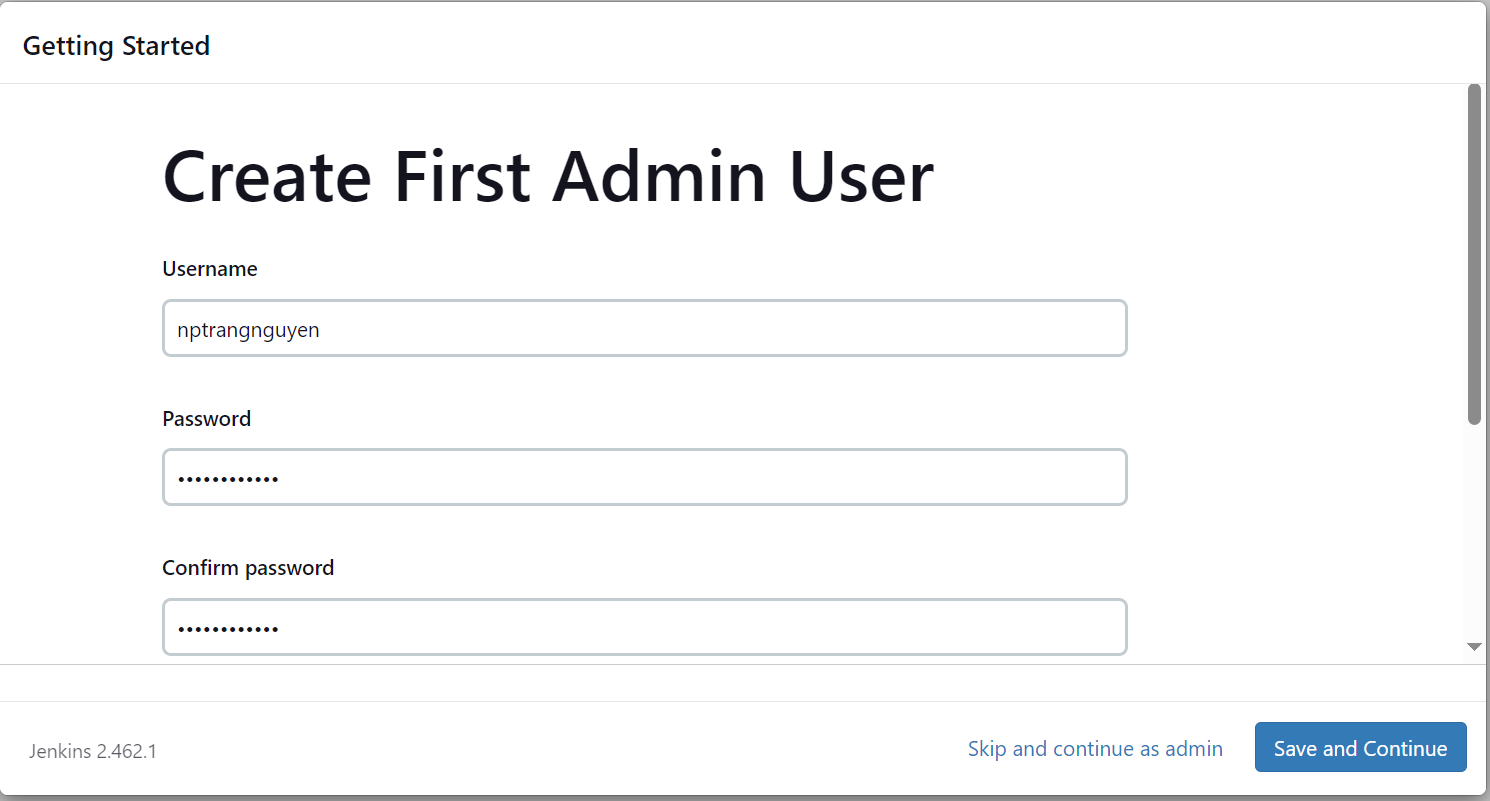
- Open address <http://ec2-public-ip:8080> to start the Jenkins.



## **3.3 Setup Jenkins account**

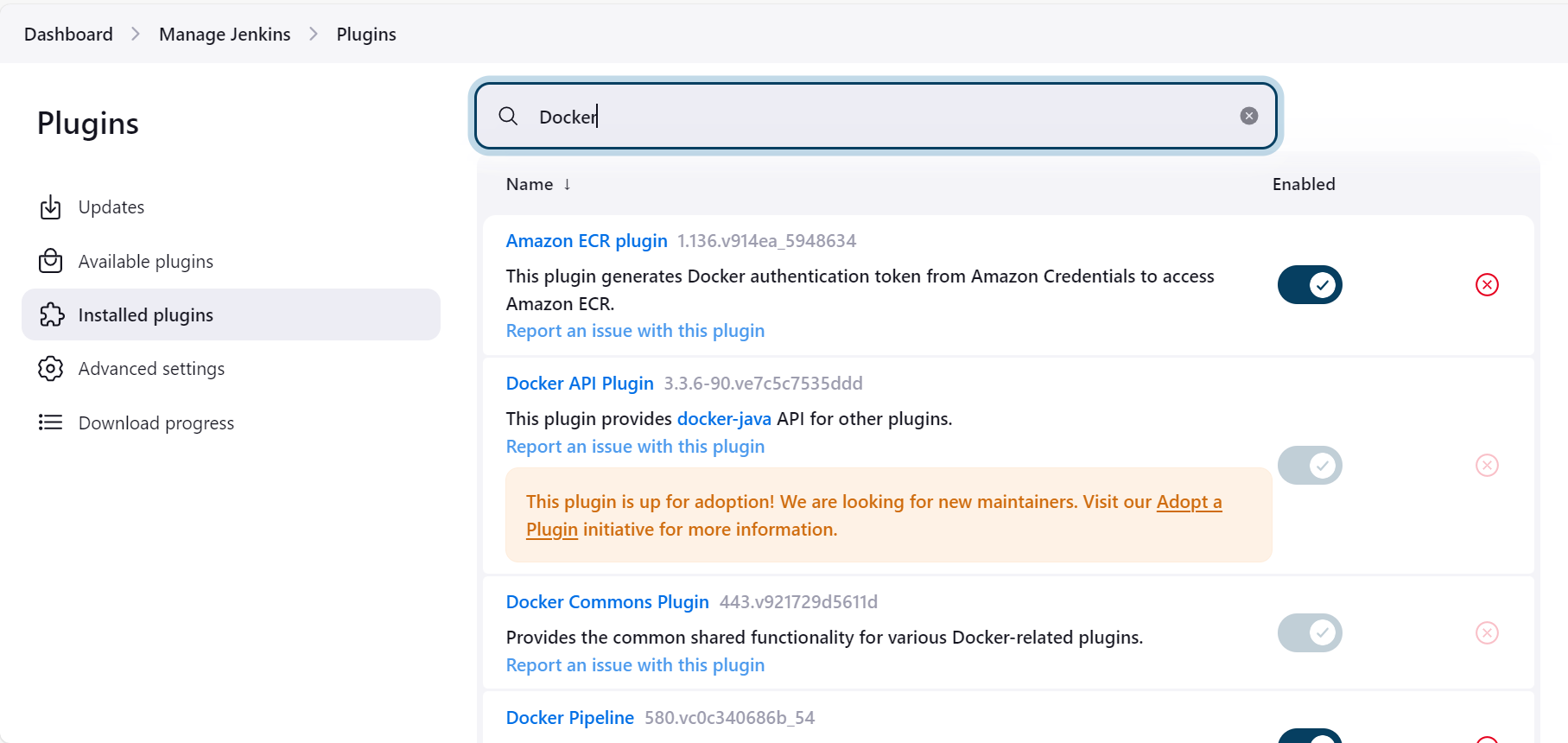
- Following the getting started page to get the administrator password then setup your own username and password.



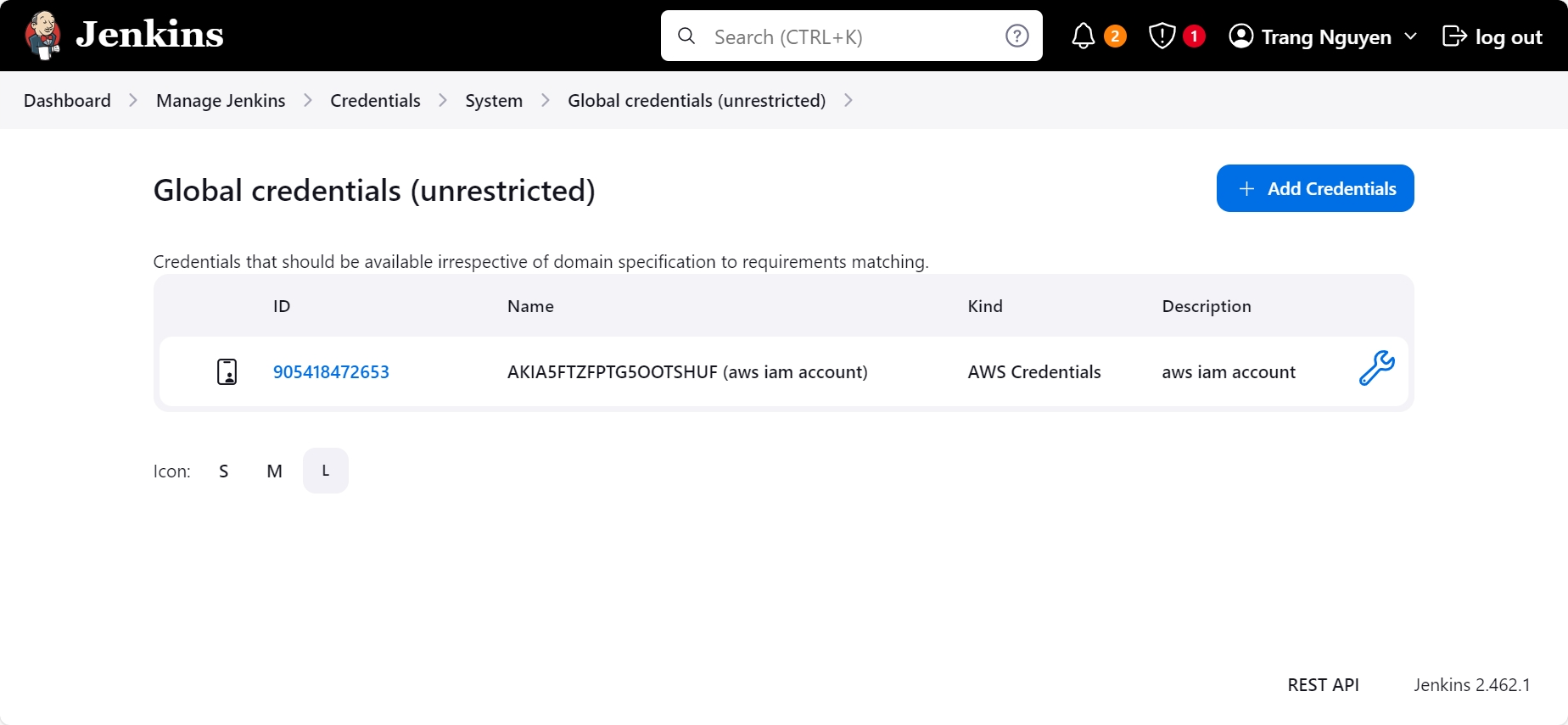


1. **Push docker images to AWS ACR**

* On jenkins install necessary plugins to run docker and kubernetes commands.(docker, docker pipeline, amazon ecr )



* Add AWS credential, go to the Manage Jenkins>>Credentials>>system>>Global credentials.



* Create Jenkins pipeline, go to the Jenkins dashboard then click on “New Item” and choose “Pipeline” from the options.

