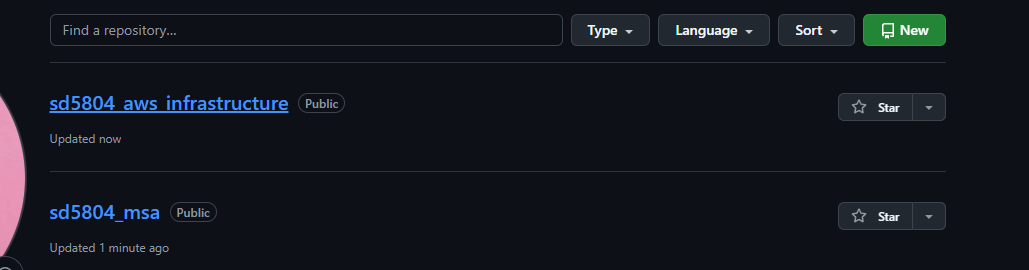
**ASSIGNMENT 1: AWS INFRASTRUCTURE**

1. Create 2 repositories on github

[ngocdung12112000/sd5804-msa](https://github.com/ngocdung12112000/sd5804-msa/tree/main) - Application code

[ngocdung12112000/sd5804\_aws\_infrastructure](https://github.com/ngocdung12112000/sd5804_aws_infrastructure) - Infrastructure code



1. Upload code to repo sd5804-msa



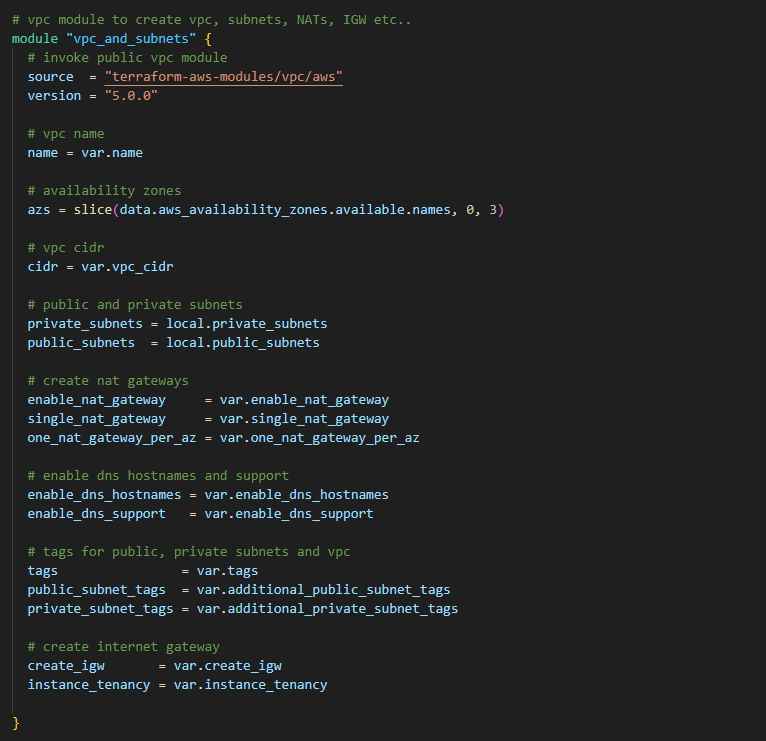
1. In repo sd5804\_aws\_infrastructure

Add 1 folder Provision

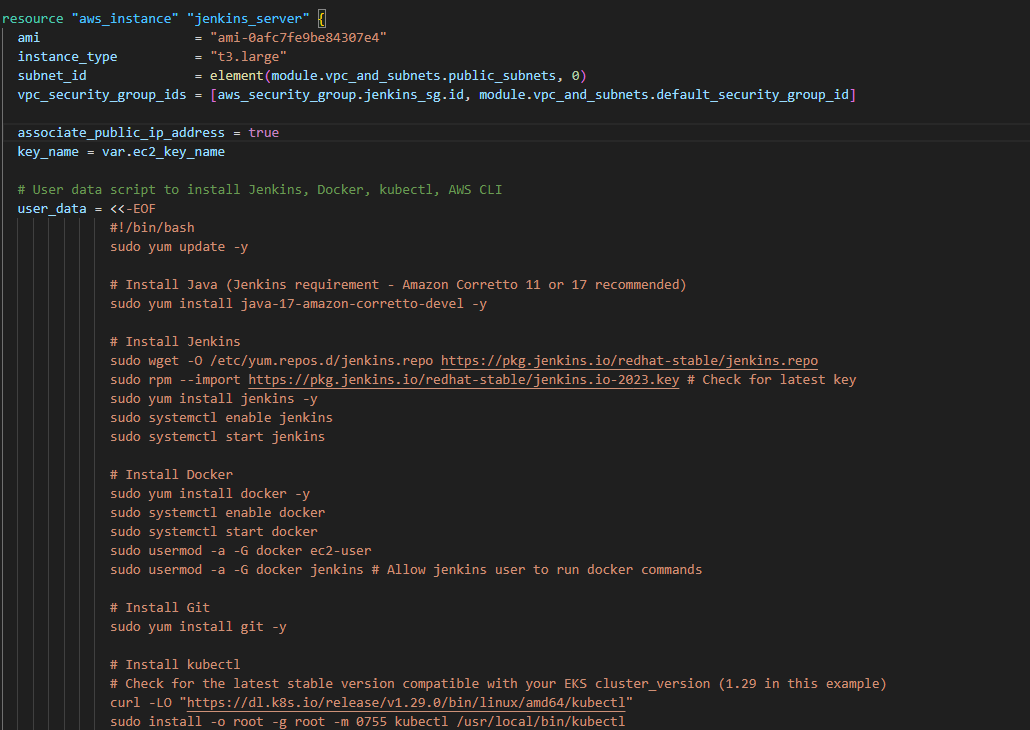


Inside folder Provision we have Terraform code to provision VPC, EC2, ECR, EKS

VPC



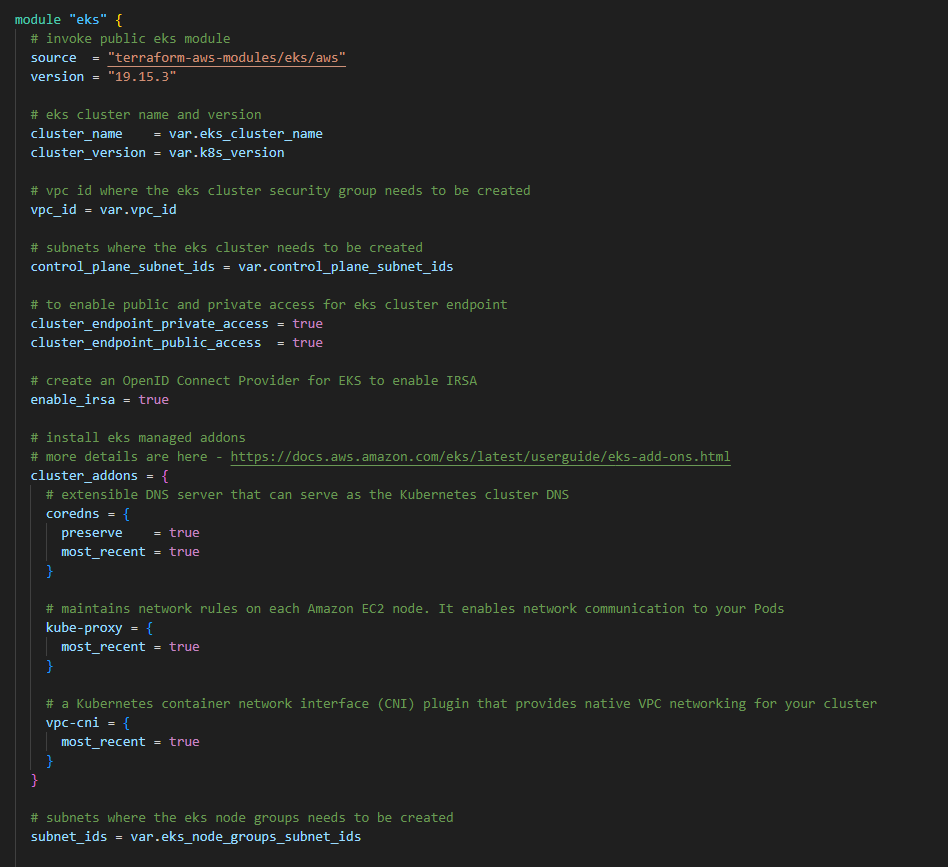
EC2 with user\_data to install Docker, Jenkins



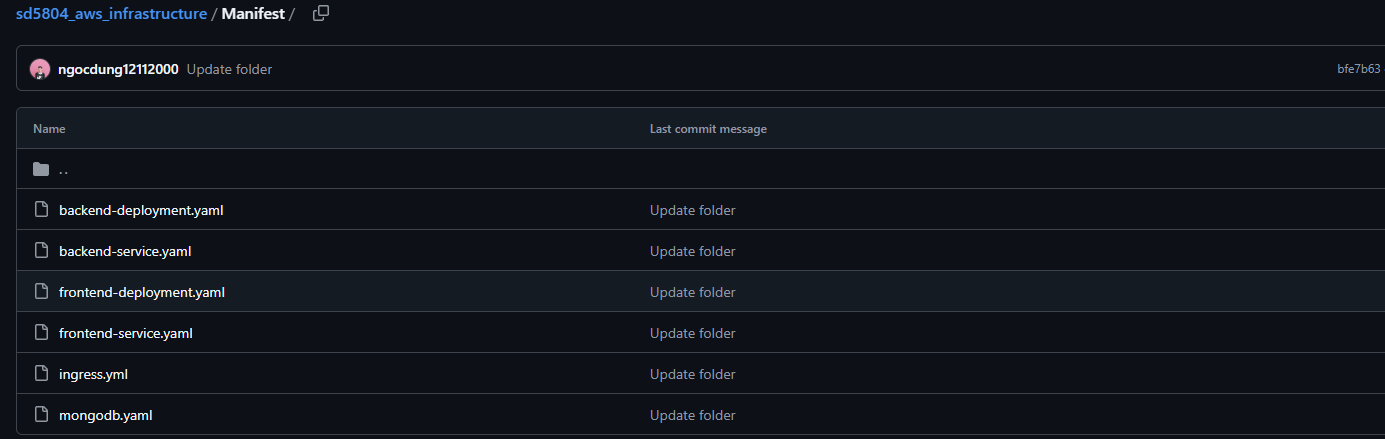
ECR



EKS



Folder Manifest



1. Run Terraform command to create resource in AWS

Initialize:

terraform init

Format and Validate:

terraform fmt

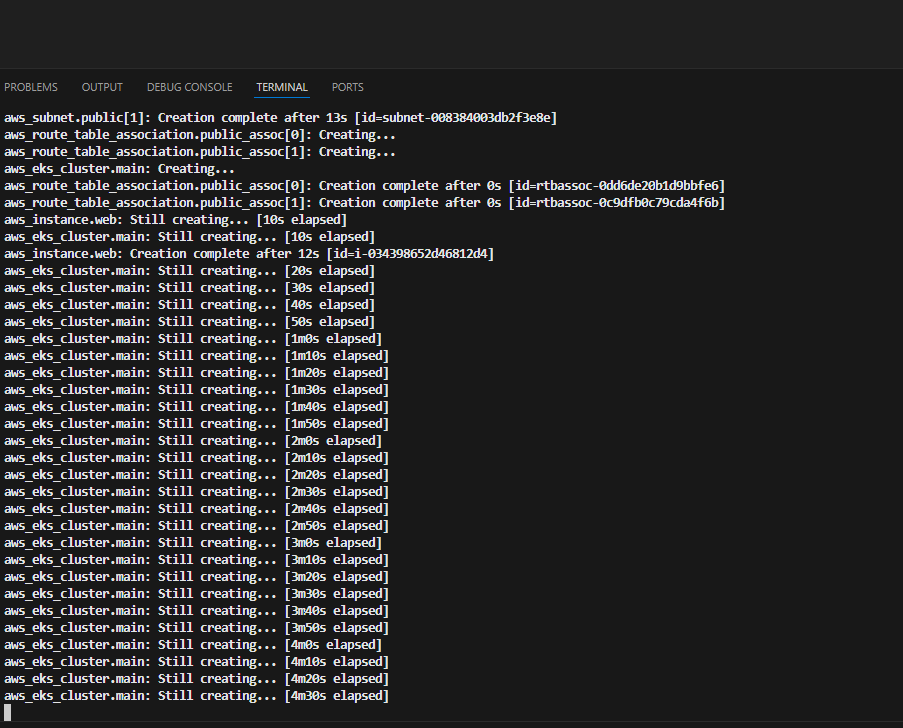
terraform validate

Plan:

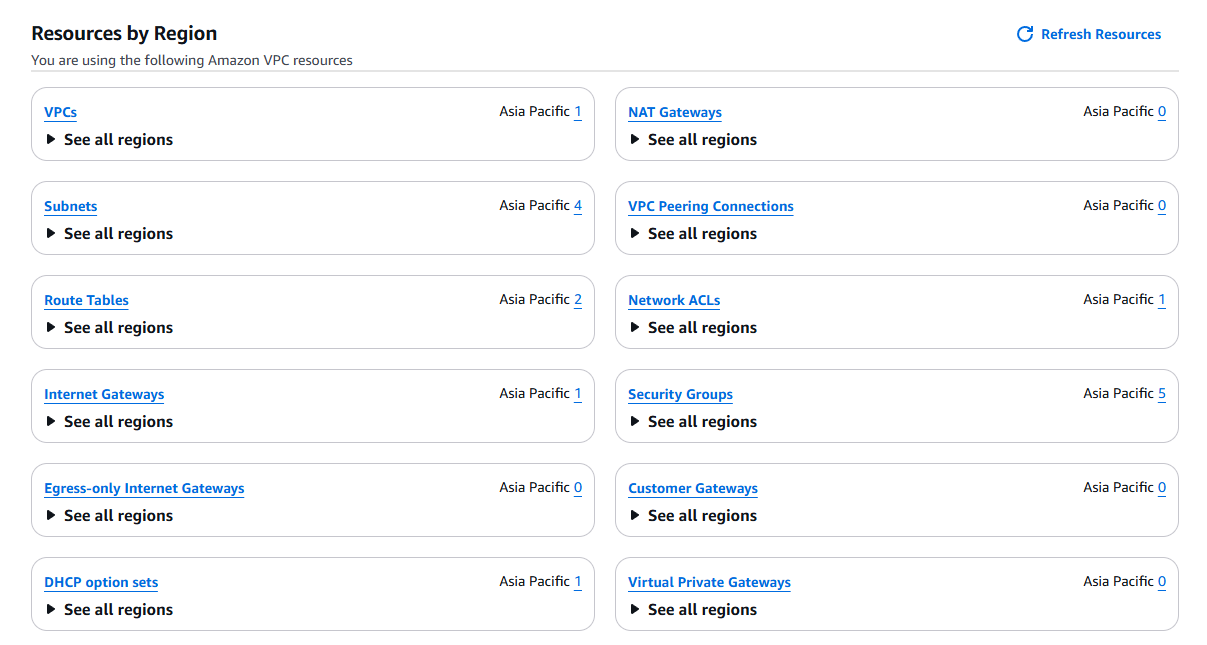
terraform plan -var-file="sample.tfvars"

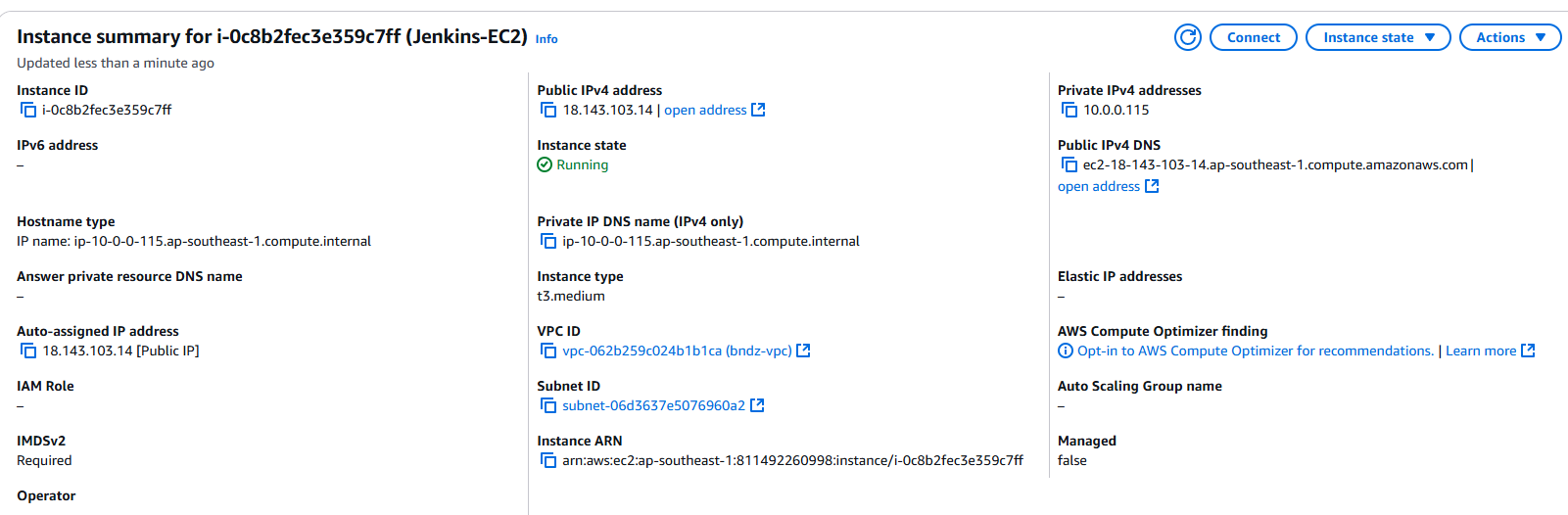
Apply

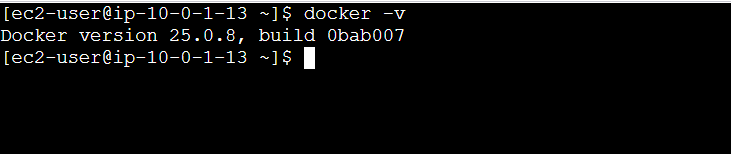
terraform apply -var-file="sample.tfvars"

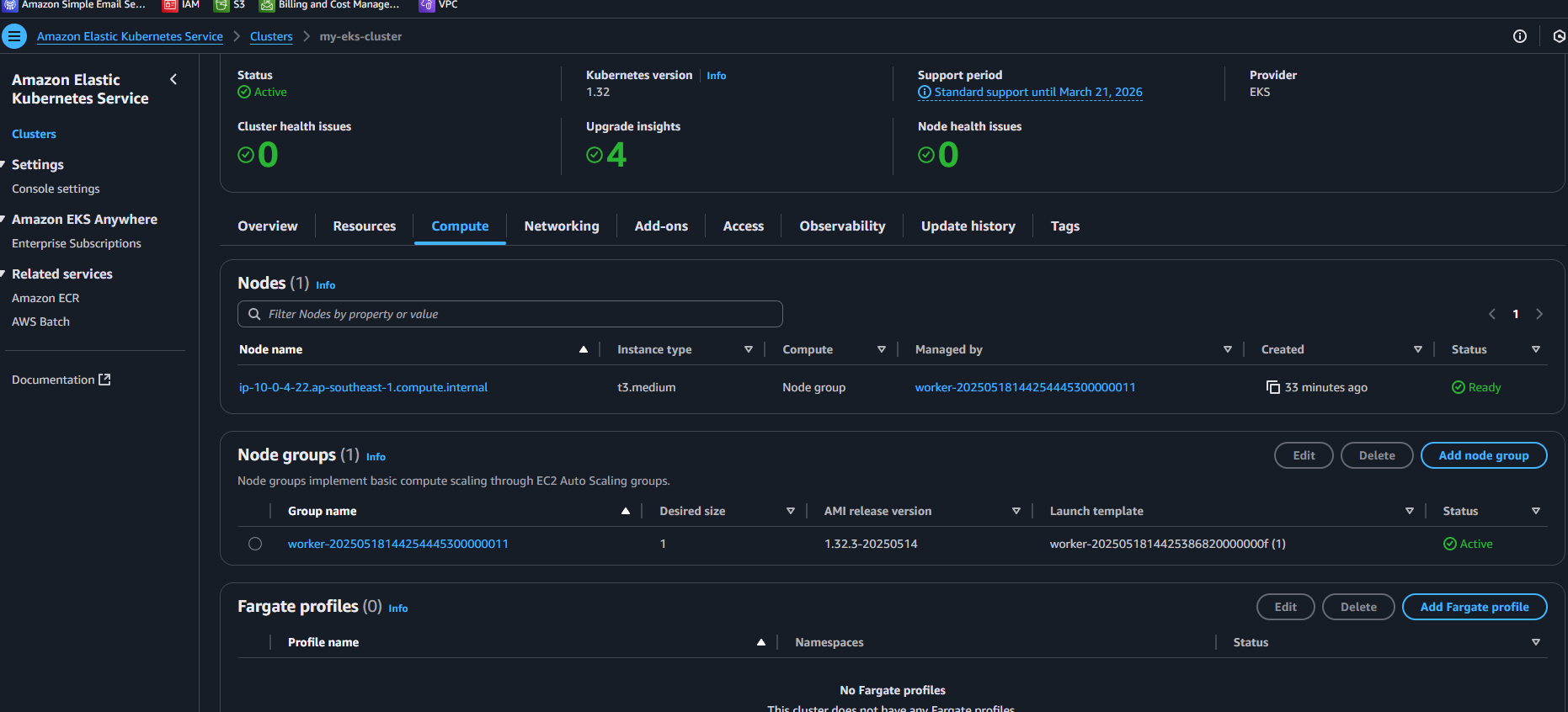


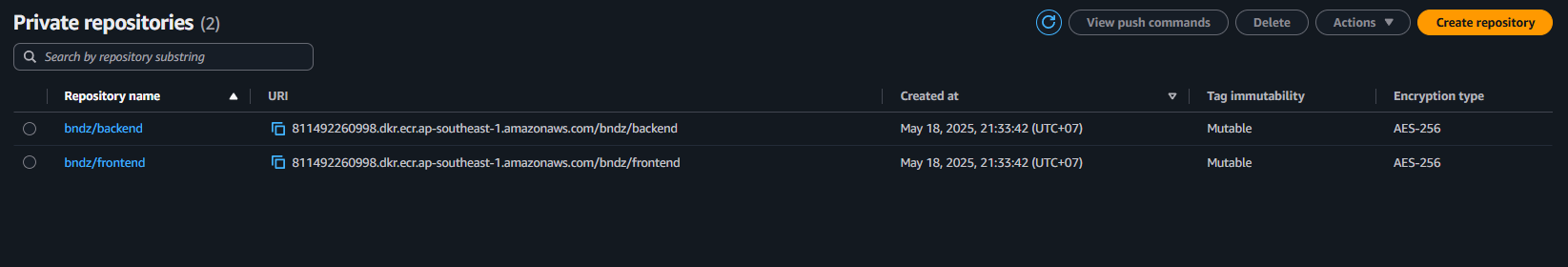
After finish we will have these resources





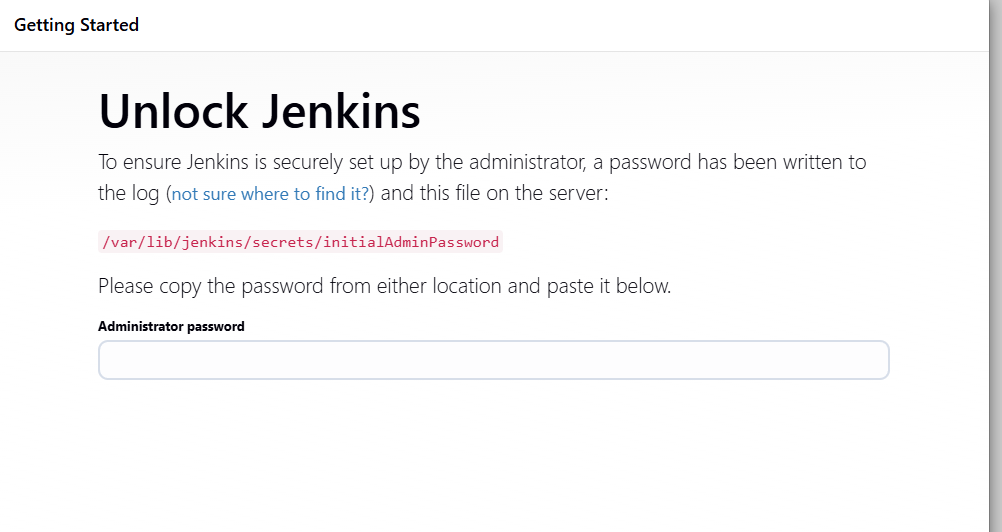






1. Jenkins Installation and Configuration on EC2

Open your browser and navigate to <http://47.129.239.20:8080/>



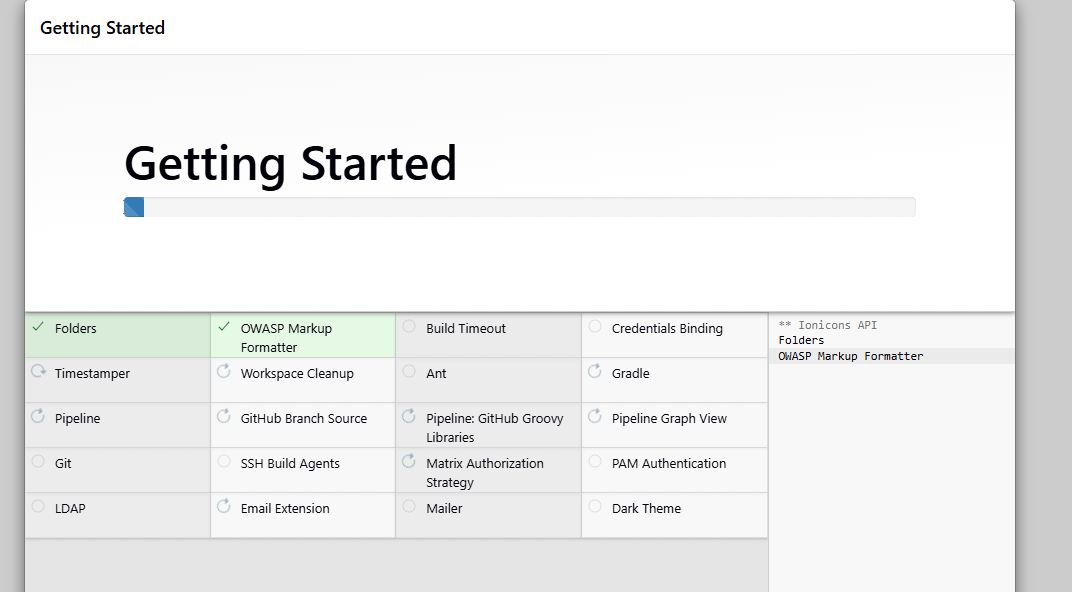
Unlock Jenkins: SSH into your Jenkins EC2 instance and get the initial admin password:

ssh -i bndz-key-pair.pem ec2-user@47.129.239.20

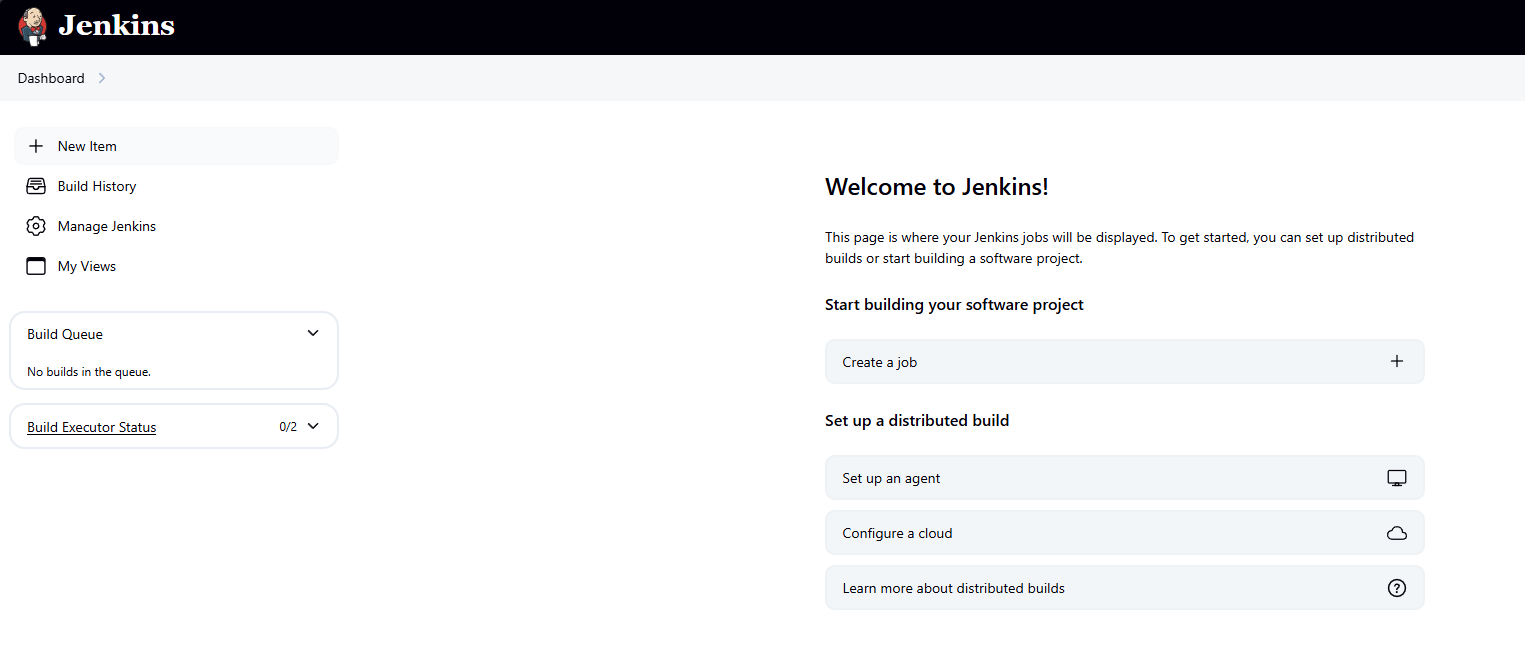
sudo cat /var/lib/jenkins/secrets/initialAdminPassword

Paste the password into the Jenkins UI

Click "Install suggested plugins."



Create Admin User then go to Jenkins Dashboard



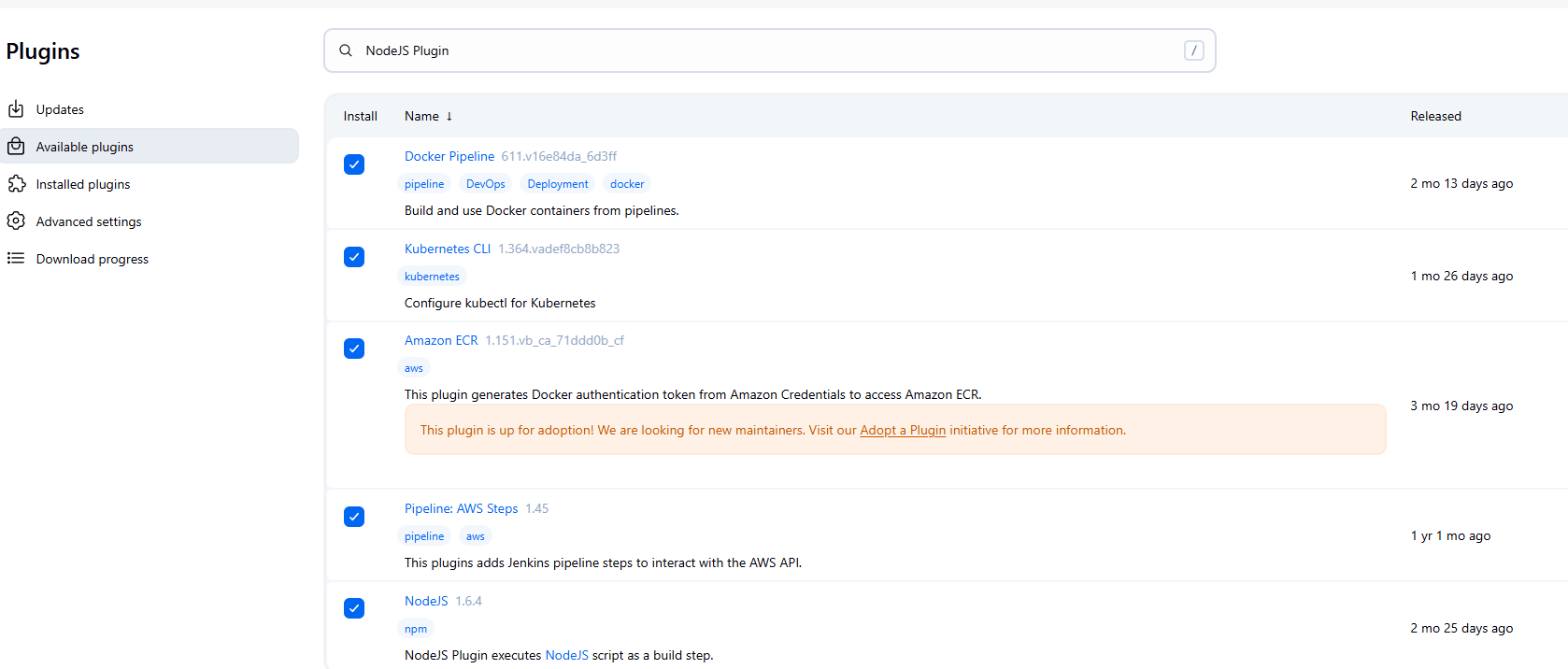
Next to Install Necessary Jenkins Plugins:

Go to "Manage Jenkins" > "Plugins" > "Available" tab.

Install:

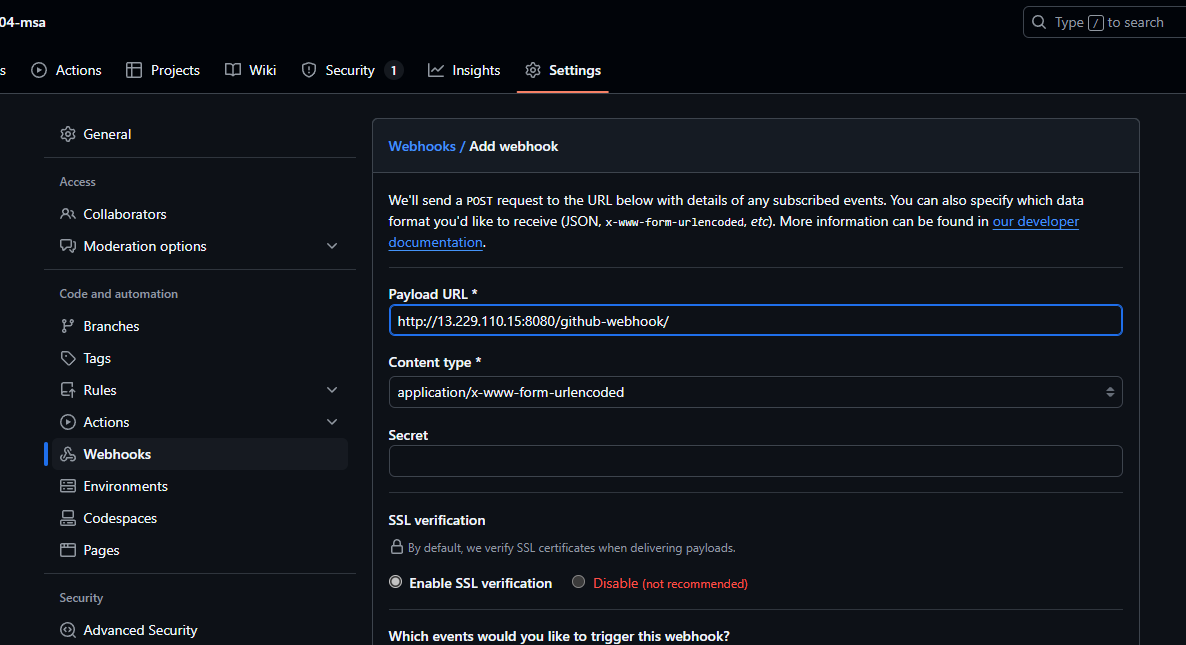
* Docker Pipeline
* Kubernetes CLI
* Amazon ECR
* Pipeline: AWS Steps
* Git
* NodeJS Plugin

Restart Jenkins if prompted after installations.



1. Create Jenkin CI Pipeline

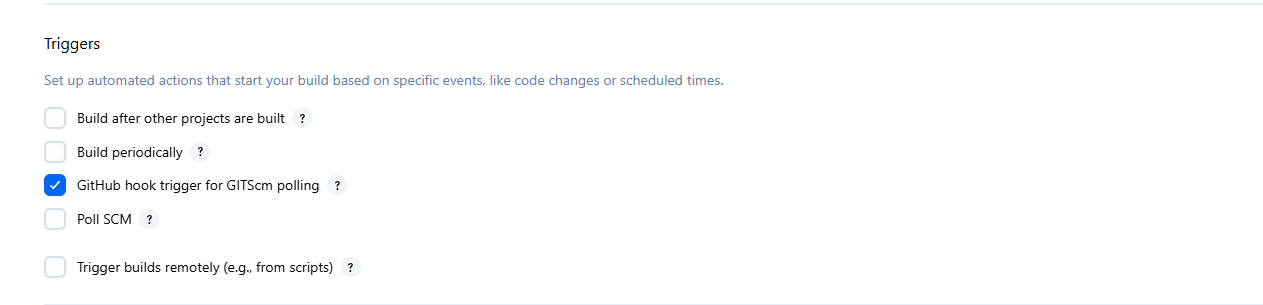
In github repo click Settings -> Click Web hook -> Fill Payload URL -> Save



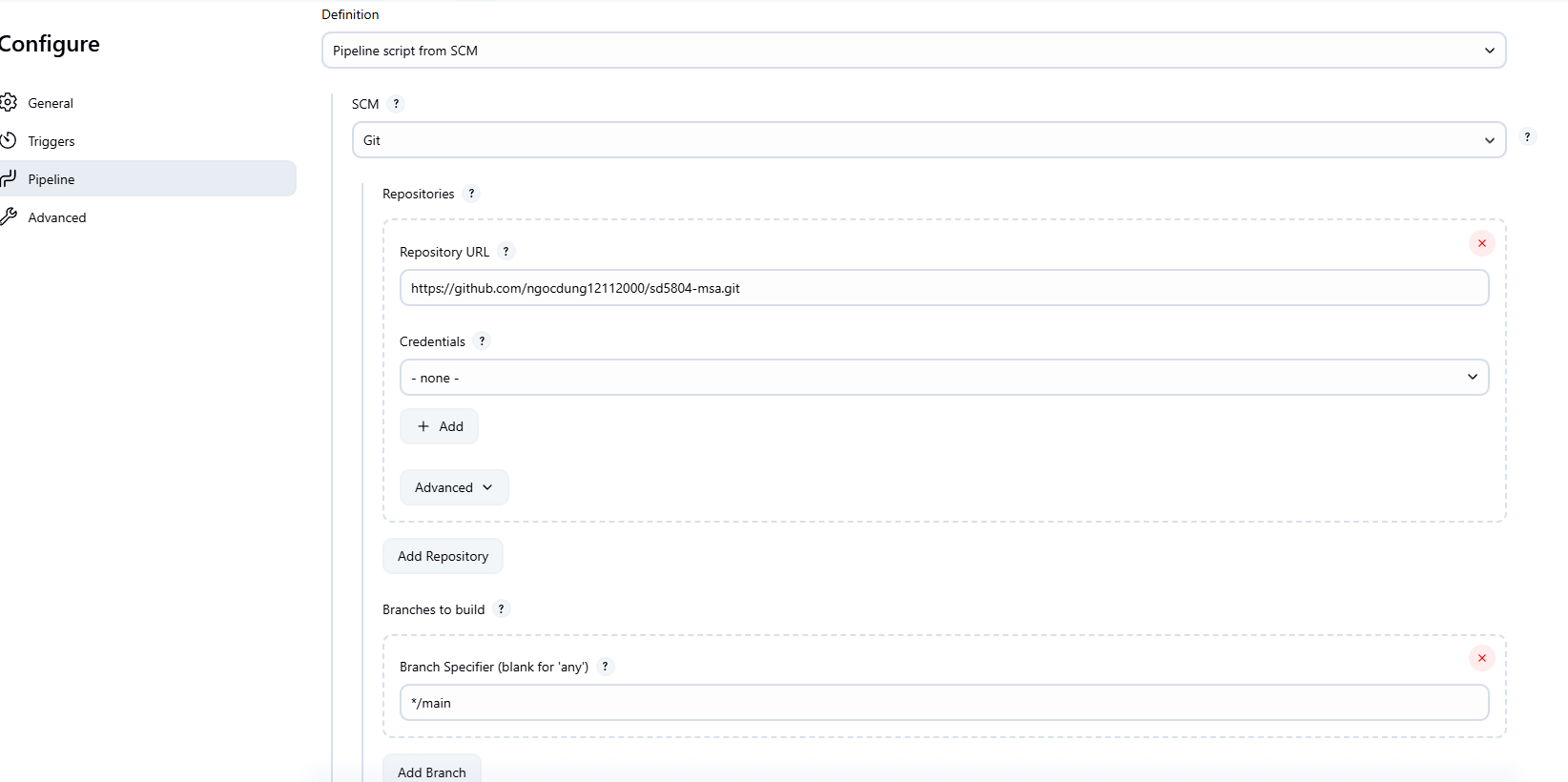
In Jenkins, click "New Item" -> Enter name “Jenkin-CI”

Select "Pipeline" and click "OK".

Tick Github hook trigger for GITScm polling



Select SCM -> Fill github repo -> Branch \*/main

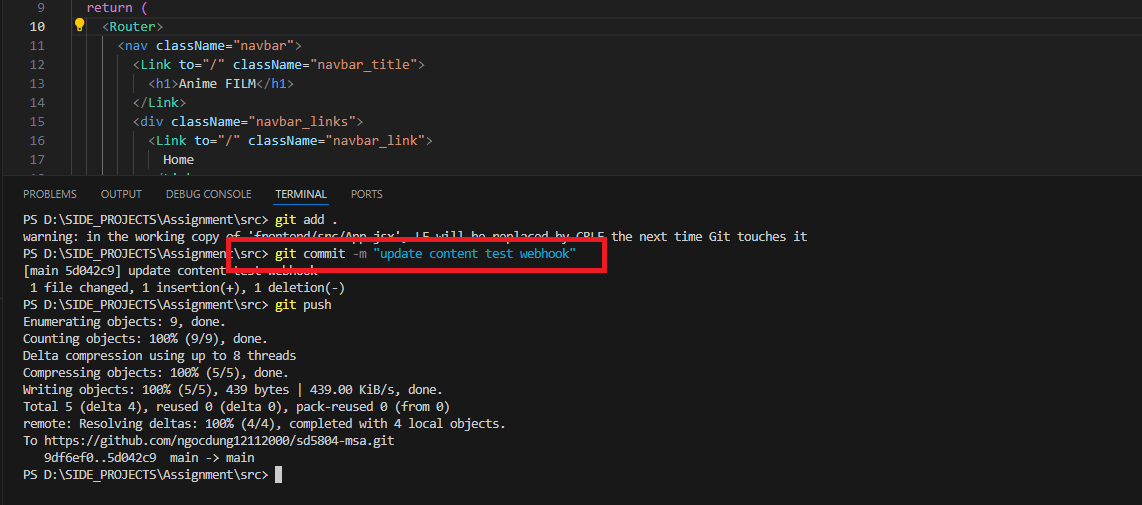


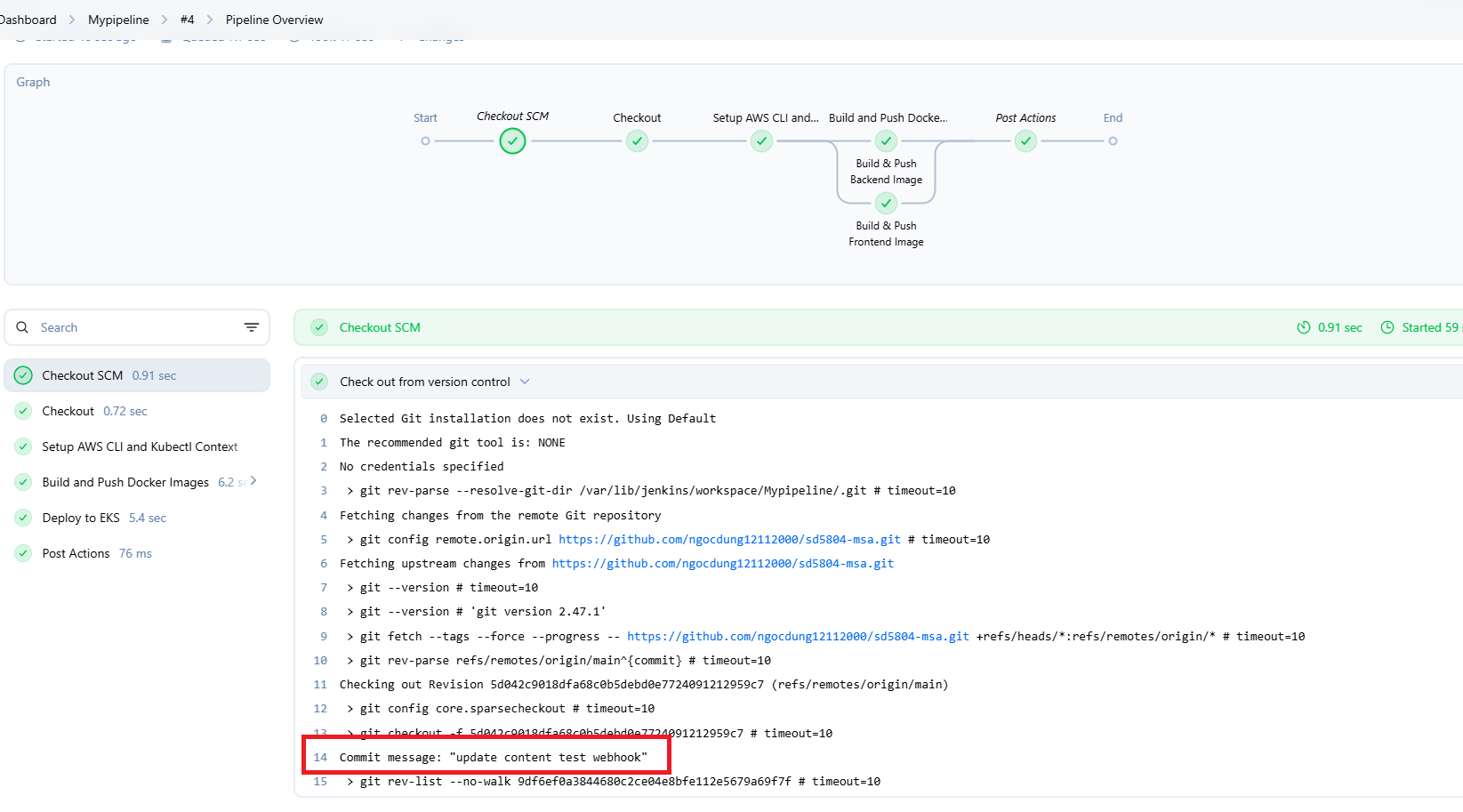
Script Path: Jenkinsfile

Save the job.

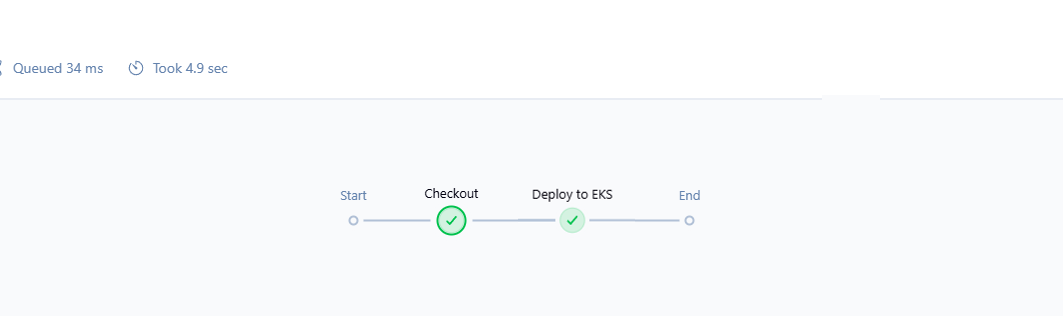


1. Add commit to test Jenkins-CI pipeline through webhook



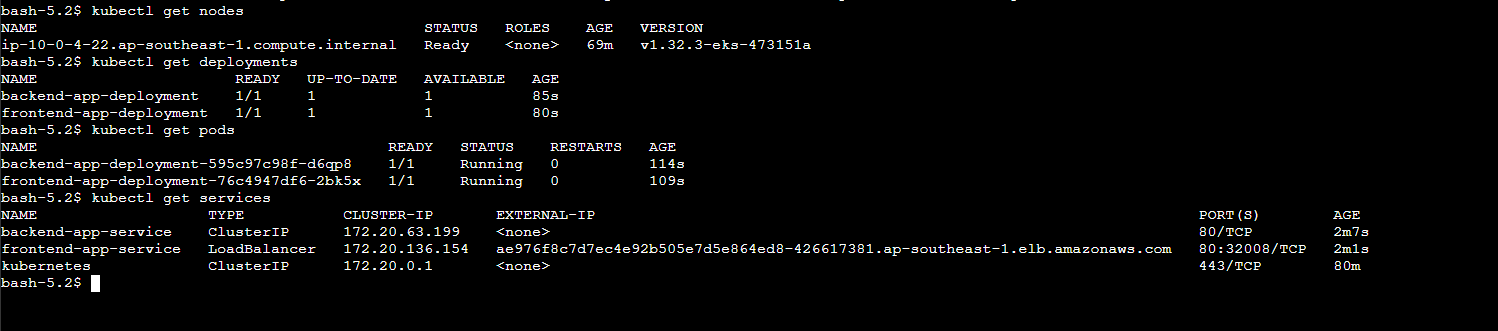


1. Click build now in Jenkin-CD to deploy to EKS

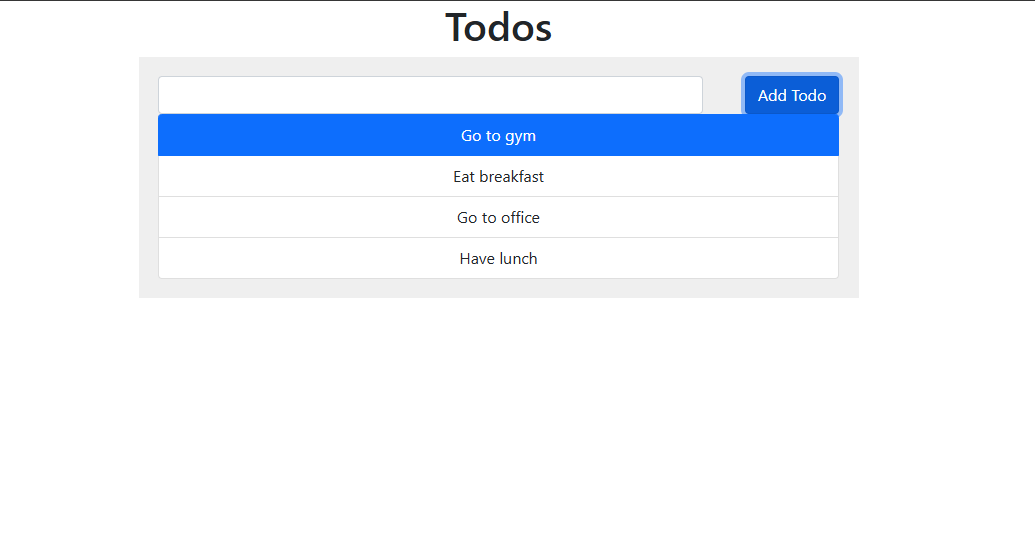


Connect to Jenkin server instance

run command kubectl get services



Copy external IP in frontend-app-service -> Paste to browser



1. Set up Prometheus and Grafana

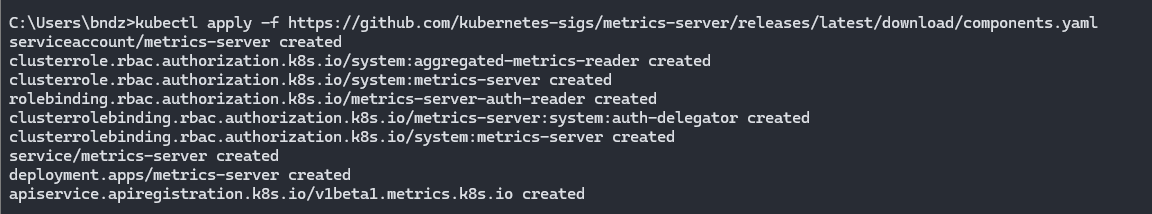
Run command to connect EKS cluster

aws eks update-kubeconfig --region "ap-southeast-1" --name "my-eks-cluster"

* Set up Metrics Server

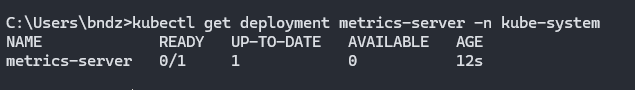
Deploy the Metrics Server with the following command:

kubectl apply -f https://github.com/kubernetes-sigs/metrics-server/releases/latest/download/components.yaml



Verify that the metric-server

kubectl get deployment metrics-server -n kube-system



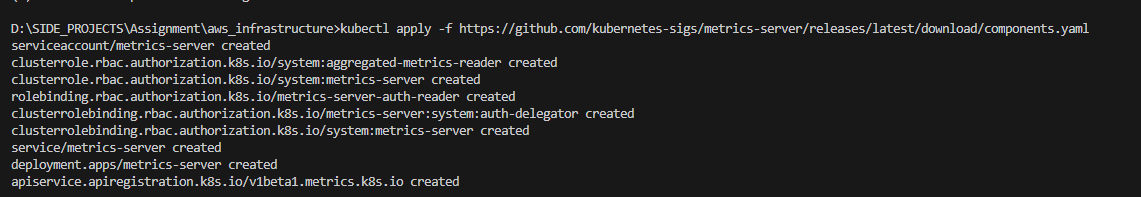
- Deploy Prometheus using Helm

Create a Prometheus namespace.

kubectl create namespace prometheus

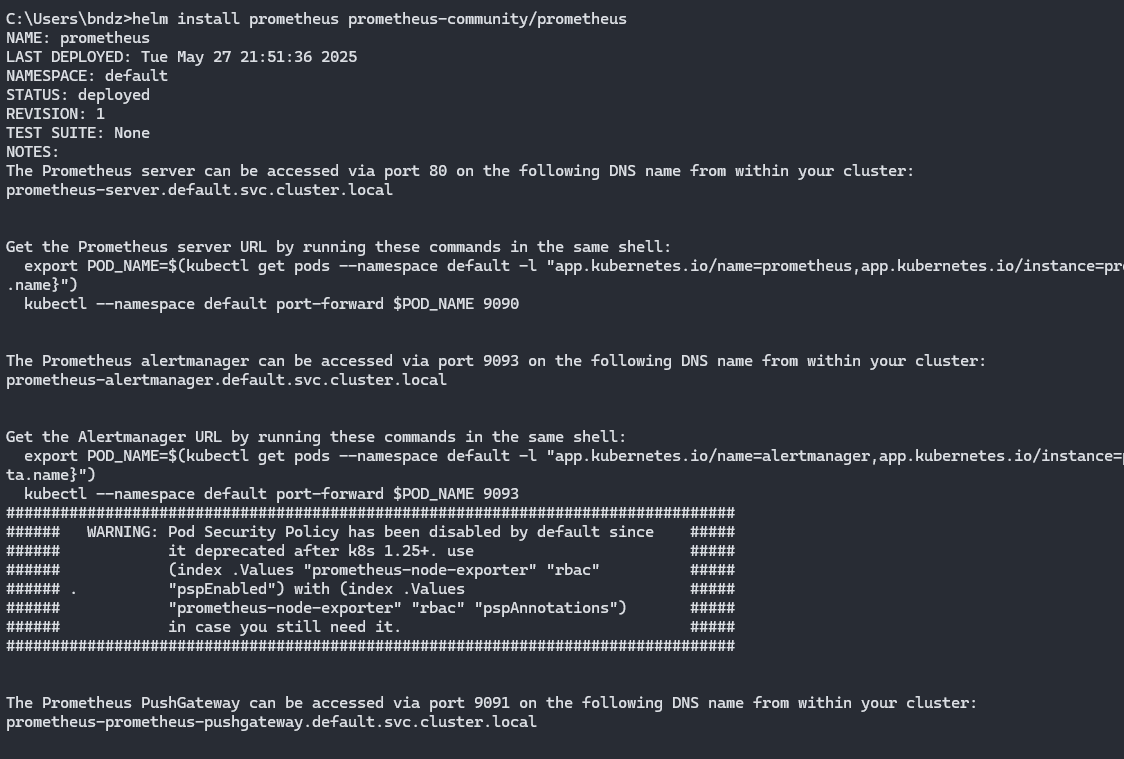
Add the prometheus-community chart repository.

helm repo add prometheus-community <https://prometheus-community.github.io/helm-charts>

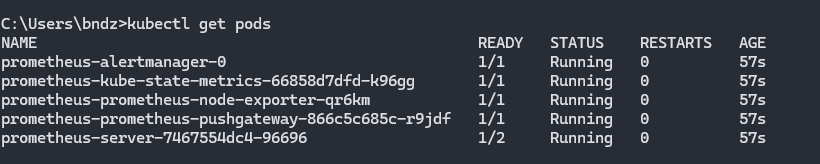


Install prometheus

helm install prometheus prometheus-community/prometheus

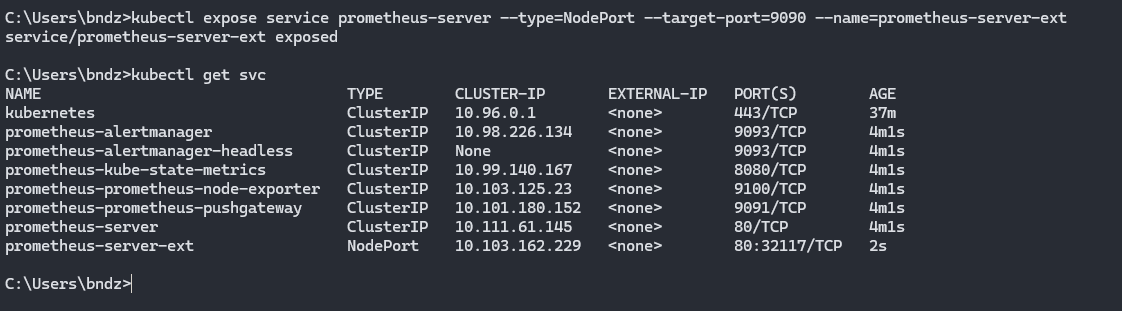


kubectl get pods

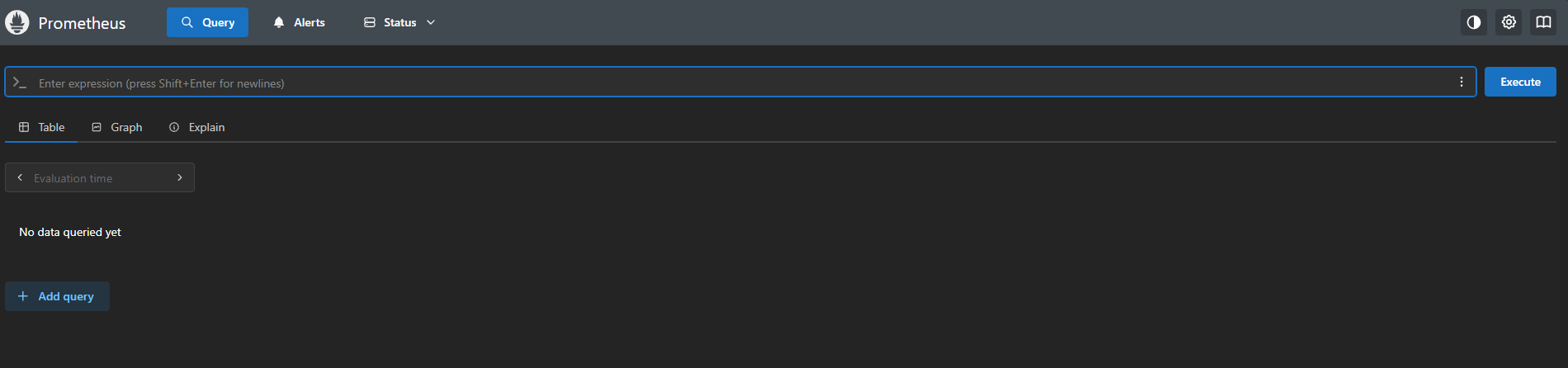


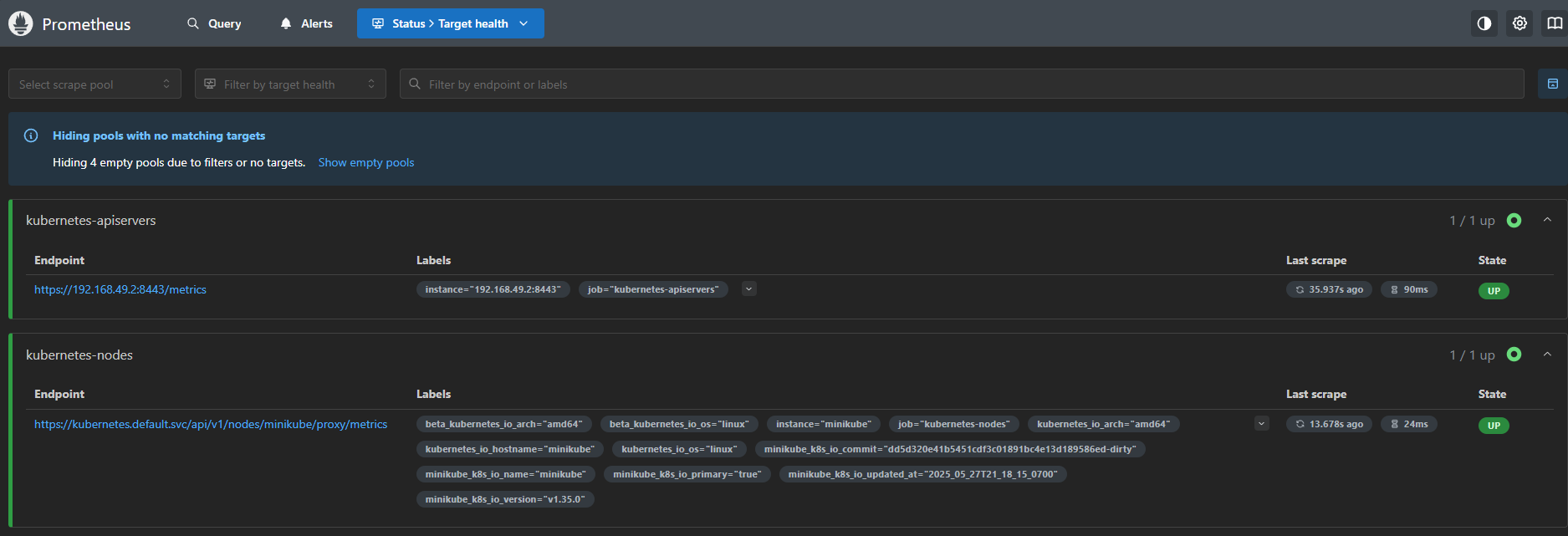
Expose service prometheus

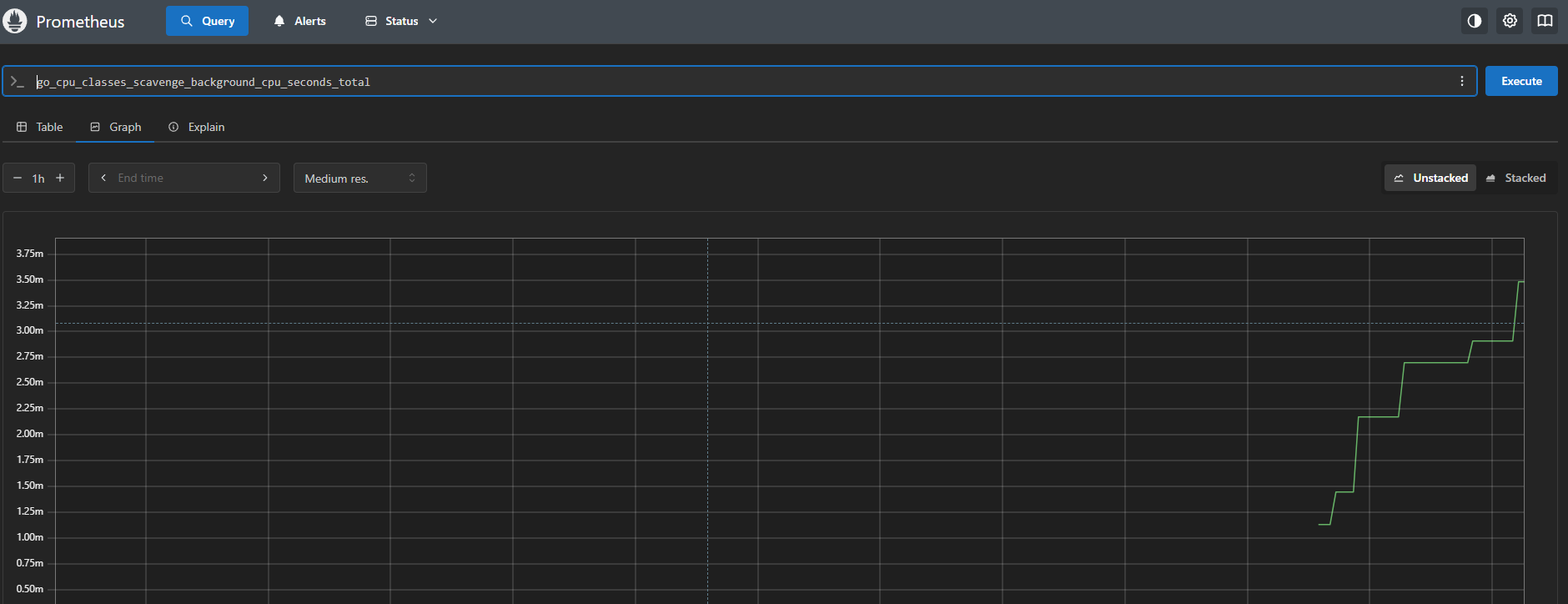
kubectl expose service prometheus --type=NodePort --target-port=9090 --name=prometheus-server-ext



Open in browser





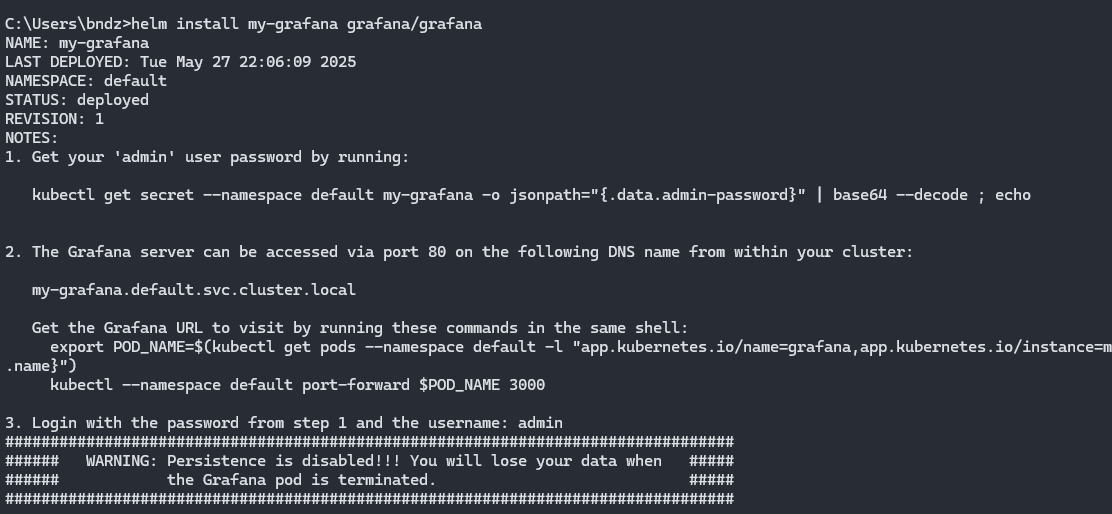


Install grafana

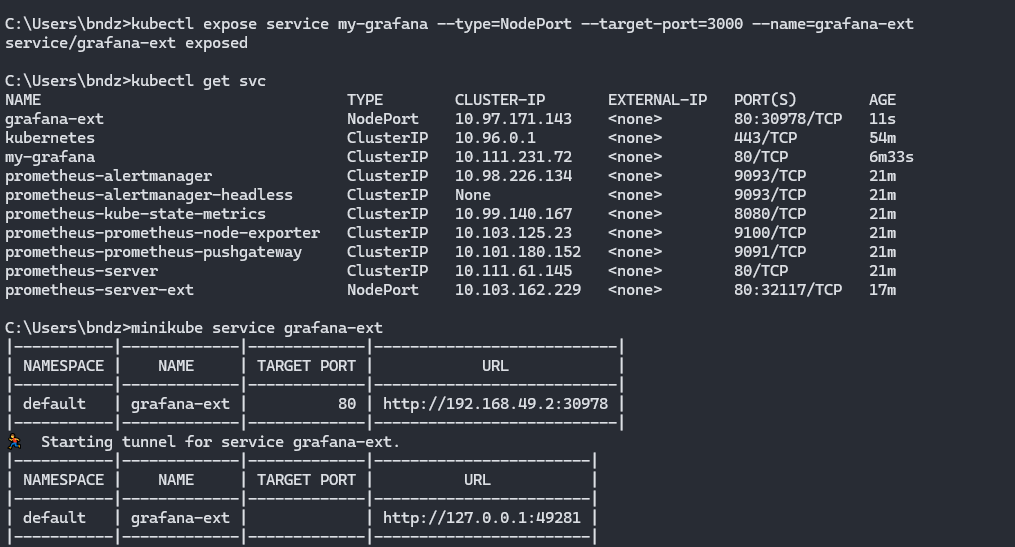
Add repo

helm repo add grafana https://grafana.github.io/helm-charts

Install

helm install my-grafana grafana/grafana

Expose grafana service

kubectl expose service my-grafana --type=NodePort --target-port=3000 --name=grafana-ext

Get secret

kubectl get secret --namespace monitoring my-grafana -o jsonpath="{.data.admin-password}" | base64 --decode ; echo

-> Password: CUnxmrxBuKFcWUm8HERWxZbqgRQiB2a2ruOr1VVn

Open browser

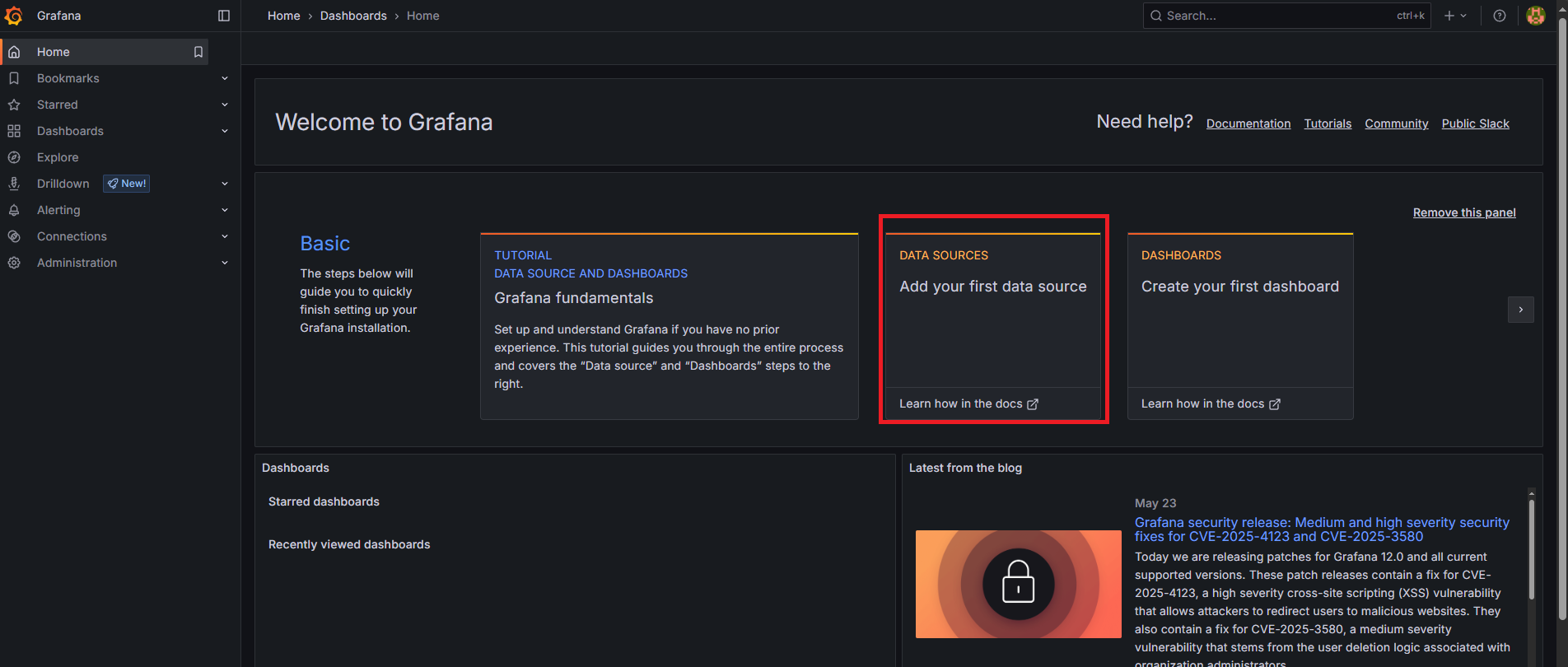
Login with

username: admin

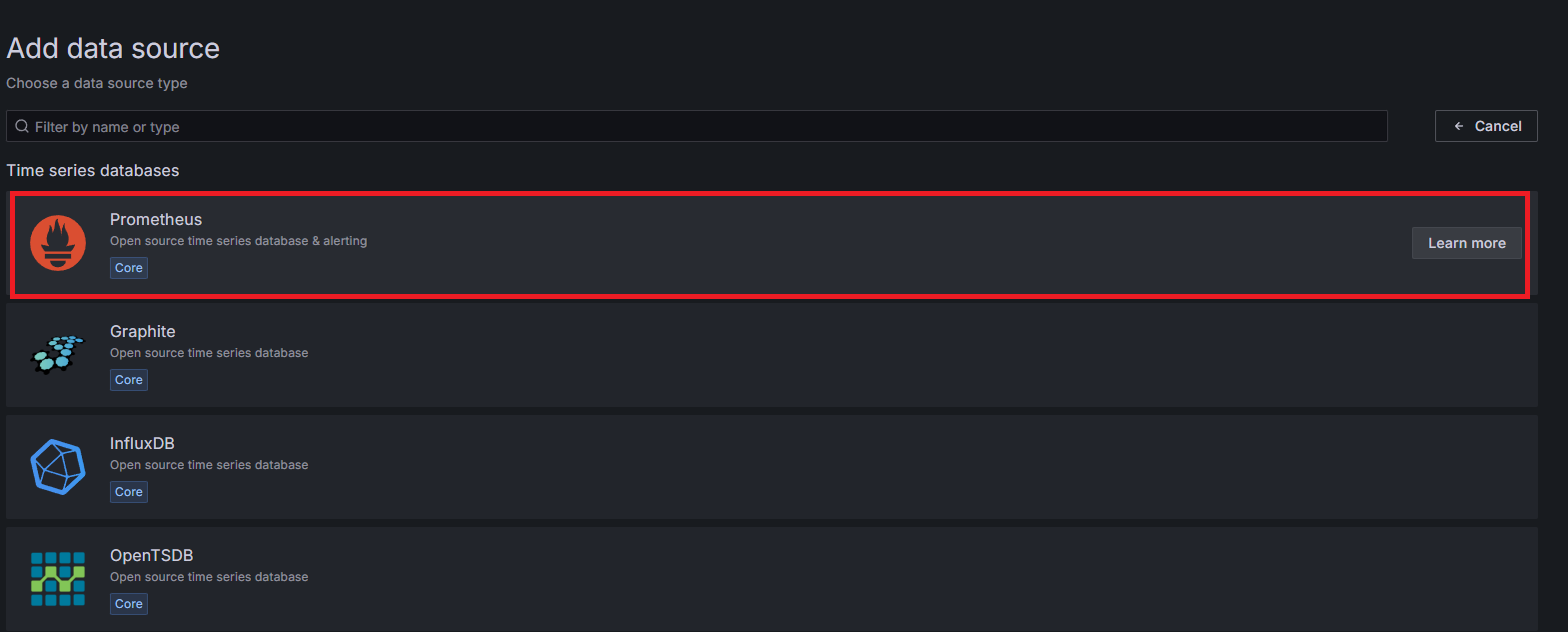
password: CUnxmrxBuKFcWUm8HERWxZbqgRQiB2a2ruOr1VVn

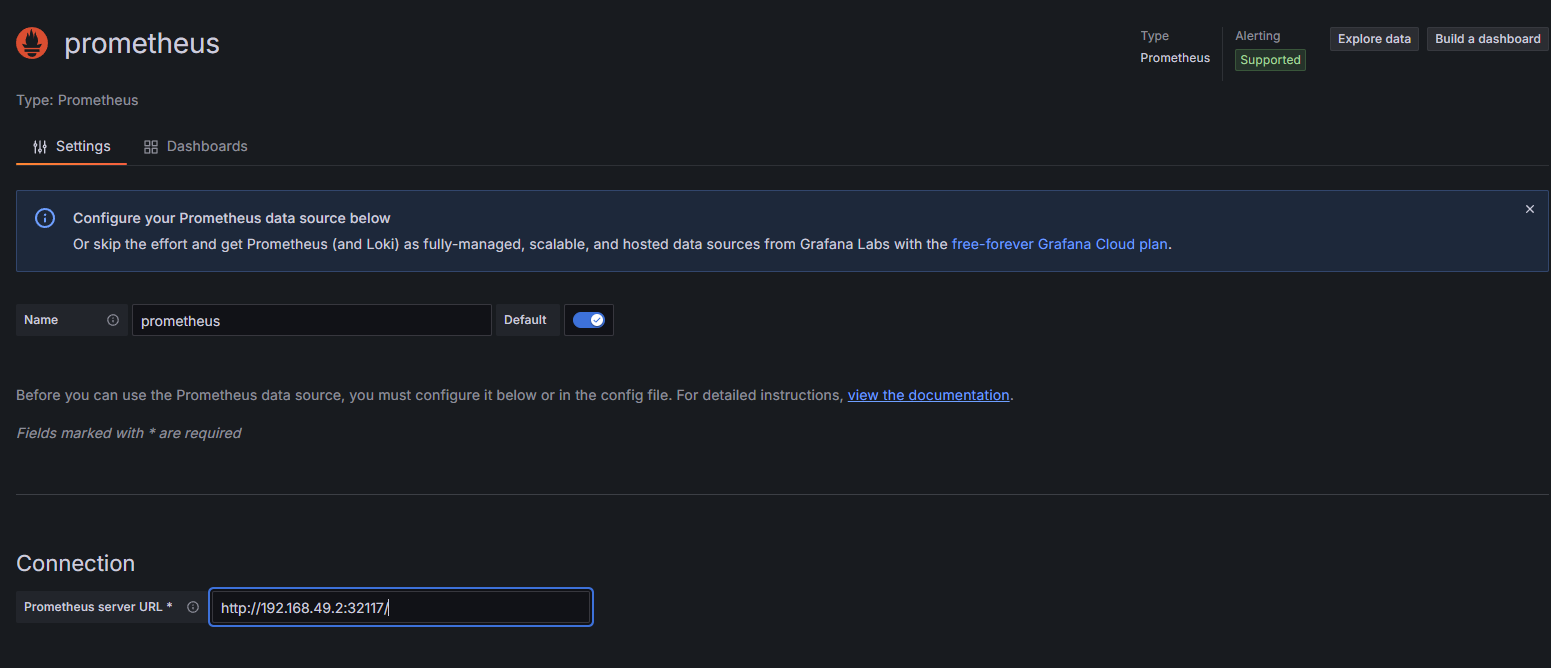


Add first data



Select Prometheus





Import dashboard

