🇬🇧🇯🇵🇸🇬🇸🇬 CICD Group Activity (by using Jenkins Pipeline) (1)

▼ **Group Activities 🇬🇧🇯🇵🇸🇬🇸🇬 (Netflix Clone Deployment on EKS with Jenkins CI/CD Pipeline)**

Own testing Project (mini) netfilix-clone (by using Jenkins CI/CD PIPE Line)

Group Name	**ROBOTs aka *(Super Active Guys)***
Project Name	**Netflix Clone Deployment by using Jenkins CICD**
participants	**Ko Than Htike, Ma Ei Mi Mi Aung, Ma Chin Phoo, Ko Teddy**

Summary

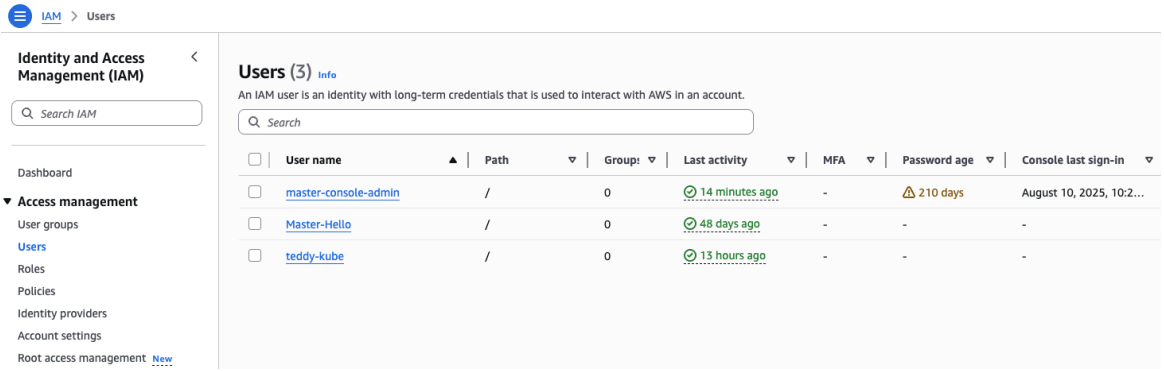
To access the movie sample web page deployment by using Jenkins CICD pipeline. by orchestrating cloud nature (AWS, Git, Kubernetes, Sonar, Jenkins, TMB, Docker and so on).

Requirements:

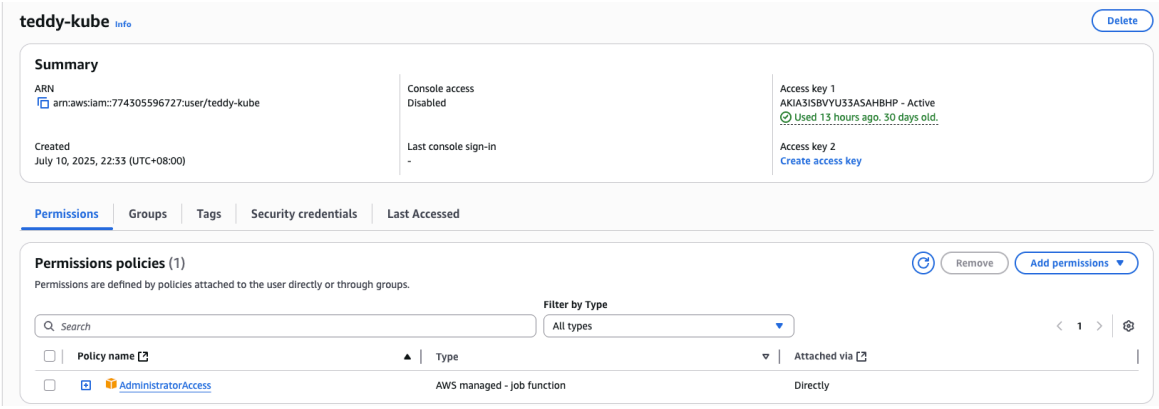
- AWS account with appropriate permissions
- Terraform installed
- AWS CLI configured
- eksctl installed
- Jenkins, SonarQube, and Trivy installed on an EC2 instance
- GitHub repository: https://github.com/TEDDY201289/Netflix-test.git
- TMDB API key from https://www.themoviedb.org/settings/api
- Google account for SMTP configuration (Optional)

- Docker installed on the Jenkins EC2 instance

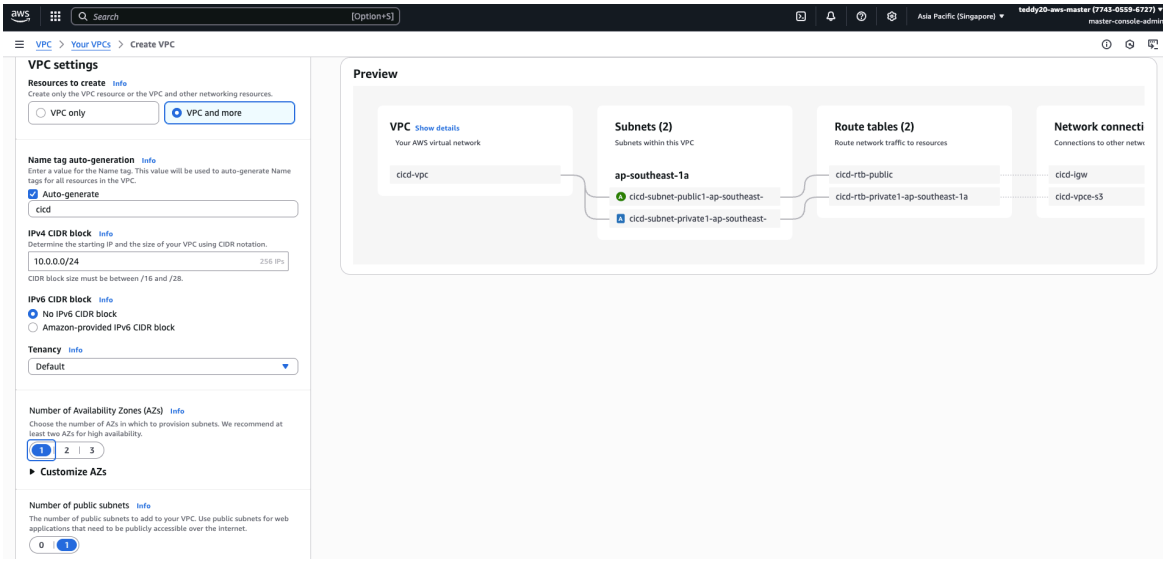
1. First of All - needs to have and start with AWS account to create vpc/subent/IGW, EC2 and EKS , so on.



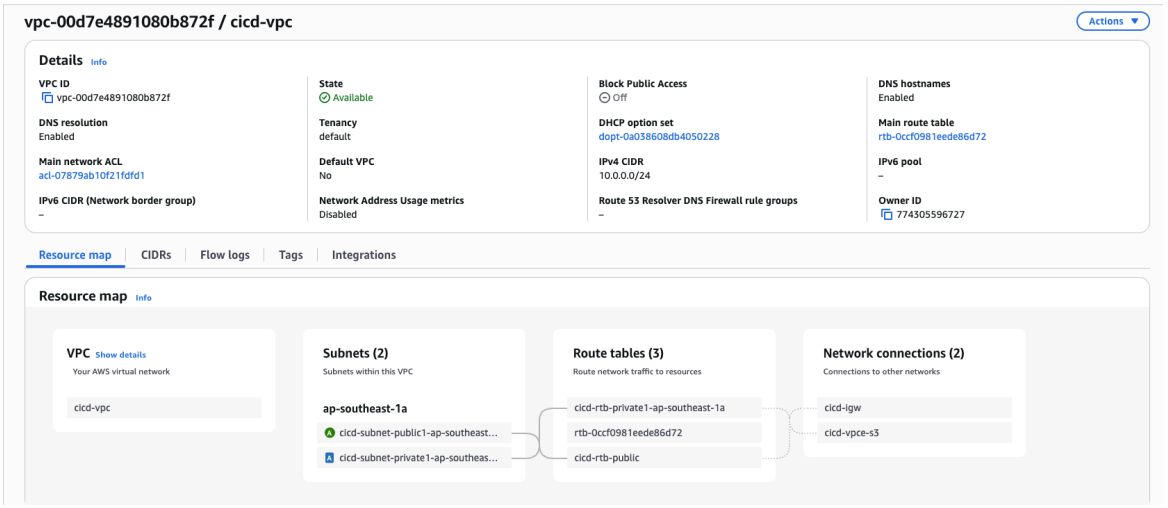
I will use this iam role for this task

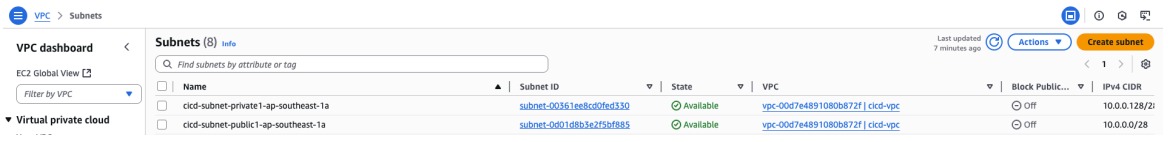


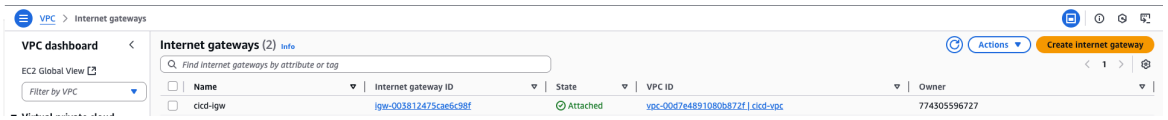
Create the VPC with this below steps:



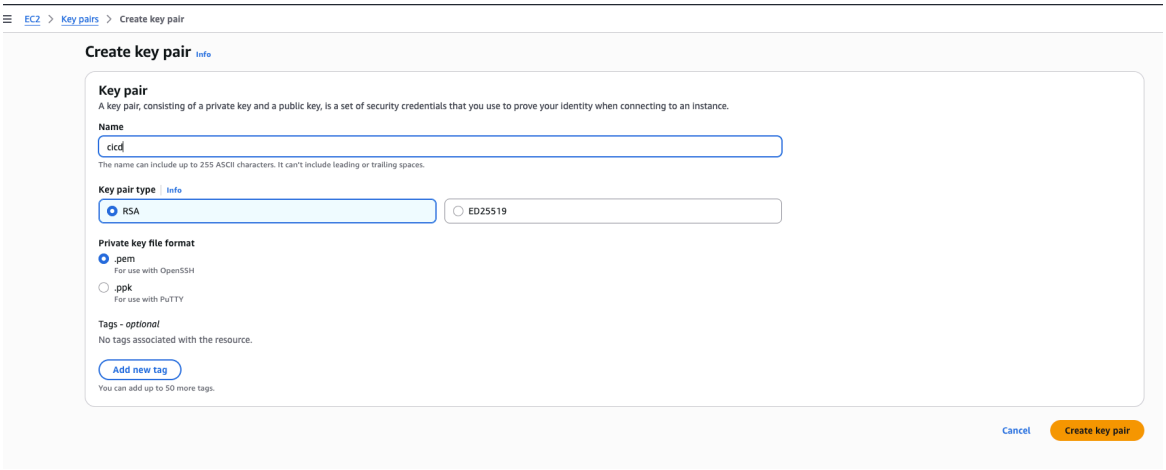
Then subnet mask, IGW, RTB all are created to allocate for Jenkins server automatically before deploying by terraform.







Create Keypair at AWS (pre-creation)



Install AWS cli for MAC users

```
teddyyekyawthu@mac Teddy-files % brew update
teddyyekyawthu@mac Teddy-files % brew install awscli
teddyyekyawthu@mac Teddy-files % aws --version
aws-cli/2.22.28 Python/3.12.6 Darwin/24.6.0 exe/x86_64
```

create aws configure in PC (to bind to create/use/deploy for Kubernetes cluster by using eksctl with created profile which is to authenticate with own AWS CLI)

```
teddyyekyawthu@mac Teddy-files % aws configure

AWS Access Key ID [None]: <your-access-key-id>
AWS Secret Access Key [None]: <your-secret-access-key>
Default region name [None]: ap-southeast-1   # Singapore example
Default output format [None]: json           # or table / text


teddyyekyawthu@mac .aws % cd ~/.aws
teddyyekyawthu@mac .aws % ls -al
total 16
drwxr-xr-x@  4 teddyyekyawthu  staff   128 Jul 10 22:31 .
drwxr-xr-x+ 71 teddyyekyawthu  staff  2272 Aug 10 10:42 ..
-rw-------@  1 teddyyekyawthu  staff   188 Aug  8 11:03 config
-rw-------@  1 teddyyekyawthu  staff   375 Aug  8 11:03 credentials

teddyyekyawthu@mac .aws % cat config

[profile teddy-kube]
region = ap-southeast-1
output = json

teddyyekyawthu@mac .aws % cat credentials
```

```
[teddy-kube]
aws_access_key_id = AKIxxxxxxxxxBHP
aws_secret_access_key = PVGxxxxxxxxxQAcxxxxxx4zkyszt
```

install eksctl for Mac

```
teddyyekyawthu@mac Teddy-files % brew tap aws/tap
teddyyekyawthu@mac Teddy-files % brew install eksctl
teddyyekyawthu@mac Teddy-files % eksctl version
0.212.0-dev+db83da480.2025-07-29T20:05:26Z
```

terraform HCL version

```
teddyyekyawthu@mac Teddy-files % terraform version
Terraform v1.12.2
on darwin_arm64


# Earlier my one was plugged-in with asdf shell so that even I downloaded by using brew , but still showing 1.10.5

# teddyyekyawthu@mac Teddy-files % terraform version
# Terraform v1.10.5
# on darwin_arm64

# Your version of Terraform is out of date! The latest version
# is 1.12.2. You can update by downloading from https://www.terraform.io/downloads.html
# teddyyekyawthu@mac Teddy-files % which terraform

# /Users/teddyyekyawthu/.asdf/shims/terraform
# teddyyekyawthu@mac Teddy-files % /usr/local/bin/terraform   # old version

# zsh: no such file or directory: /usr/local/bin/terraform
# teddyyekyawthu@mac Teddy-files % which terraform

# /Users/teddyyekyawthu/.asdf/shims/terraform

# teddyyekyawthu@mac Teddy-files % echo 'export PATH="/opt/homebrew/bin:$PATH"' >> ~/.zshrc
# source ~/.zshrc
# hash -r
# teddyyekyawthu@mac Teddy-files % asdf plugin remove terraform
# hash -r
# teddyyekyawthu@mac Teddy-files % which -a terraform
# /opt/homebrew/bin/terraform
# /opt/homebrew/bin/terraform
```

```
# /opt/homebrew/bin/terraform
# /opt/homebrew/bin/terraform
```

Infrastructure readiness by using terraform (for Jenkins, Sonarcube, Docker, Trivy etc)

Write Terraform code (provider.tf)

```
terraform {
  required_providers {
    aws = {
      source  = "hashicorp/aws"
      version = "~> 5.0"
    }
  }
}

# Configure the AWS Provider
provider "aws" {
  region  = "ap-southeast-1" #change region as per you requirement
  profile = "teddy-kube" #add your cli profile *** important
}
```

Write Terraform code (main.tf)

```
resource "aws_instance" "web" {
  ami                    = "ami-06c4be2792f419b7b" #change ami id for different region → this is
ap-southeast-1 region
  instance_type          = "t2.large" #recommanded to use
  key_name               = "cicd" #change keypair name as per your setup in AWS
  vpc_security_group_ids = [aws_security_group.Jenkins-VM-SG.id]
  subnet_id              = "subnet-0d01d8b3e2f5bf885" #change ur subnet id
  user_data = templatefile("./install.sh", {})

  tags = {
    Name = "Jenkins-SonarQube" #any name you can given
  }

  root_block_device {
    volume_size = 40
  }
}

resource "aws_security_group" "Jenkins-VM-SG" {
  name        = "Jenkins-VM-SG"
  description = "Allow TLS inbound traffic"
```

```
  vpc_id      = "vpc-00d7e4891080b872f" ###change vpc id

  ingress = [
    for port in [22, 80, 443, 8080, 9000, 3000] : {
      description      = "inbound rules"
      from_port        = port
      to_port          = port
      protocol         = "tcp"
      cidr_blocks      = ["0.0.0.0/0"]
      ipv6_cidr_blocks = []
      prefix_list_ids  = []
      security_groups  = []
      self             = false
    }
  ]

  egress {
    from_port   = 0
    to_port     = 0
    protocol    = "-1"
    cidr_blocks = ["0.0.0.0/0"]
  }

  tags = {
    Name = "Jenkins-VM-SG"
  }
}
```

original file from KO Hlaing

```
resource "aws_instance" "web" {
  ami                    = "ami-06c4be2792f419b7b" # Update AMI ID for your region
  instance_type          = "t2.large"
  key_name               = "keypair" # Update key name
  vpc_security_group_ids = [aws_security_group.Jenkins-VM-SG.id]
  user_data              = templatefile("./install.sh", {})

  tags = {
    Name = "Jenkins-SonarQube"
  }

  root_block_device {
    volume_size = 25
  }
}
```

```
resource "aws_security_group" "Jenkins-VM-SG" {
  name        = "Jenkins-VM-SG"
  description = "Allow TLS inbound traffic"
  vpc_id      = "vpc-0d5b095006ca56d4f" # Update VPC ID

  ingress = [
    for port in [22, 80, 443, 8080, 9000, 3000] : {
      description      = "inbound rules"
      from_port        = port
      to_port          = port
      protocol         = "tcp"
      cidr_blocks      = ["0.0.0.0/0"]
      ipv6_cidr_blocks = []
      prefix_list_ids  = []
      security_groups  = []
      self             = false
    }
  ]

  egress {
    from_port   = 0
    to_port     = 0
    protocol    = "-1"
    cidr_blocks = ["0.0.0.0/0"]
  }

  tags = {
    Name = "Jenkins-VM-SG"
  }
}
```

bash for installation (./ install.sh)

```
#!/bin/bash
sudo apt update -y
wget -O - https://packages.adoptium.net/artifactory/api/gpg/key/public | tee /etc/apt/keyr
ings/adoptium.asc
echo "deb [signed-by=/etc/apt/keyrings/adoptium.asc] https://packages.adoptium.net/art
ifactory/deb $(awk -F= '/^VERSION_CODENAME/{print$2}' /etc/os-release) main" | tee /et
c/apt/sources.list.d/adoptium.list
sudo apt update -y
sudo apt install temurin-21-jdk -y
/usr/bin/java --version
curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key | sudo tee /usr/share/k
eyrings/jenkins-keyring.asc > /dev/null
```

```
echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] https://pkg.jenkins.io/debi
an-stable binary/ | sudo tee /etc/apt/sources.list.d/jenkins.list > /dev/null
sudo apt-get update -y
sudo apt-get install jenkins -y
sudo systemctl start jenkins
sudo systemctl status jenkins

# Install Docker and Run SonarQube as Container
sudo apt-get update
sudo apt-get install docker.io -y
sudo usermod -aG docker ubuntu
sudo usermod -aG docker jenkins
newgrp docker
sudo chmod 777 /var/run/docker.sock
docker run -d --name sonar -p 9000:9000 --restart unless-stopped sonarqube:lts-comm
unity

# Install Trivy
sudo apt-get install wget apt-transport-https gnupg lsb-release -y
wget -qO - https://aquasecurity.github.io/trivy-repo/deb/public.key | gpg --dearmor | sud
o tee /usr/share/keyrings/trivy.gpg > /dev/null
echo "deb [signed-by=/usr/share/keyrings/trivy.gpg] https://aquasecurity.github.io/trivy-r
epo/deb $(lsb_release -sc) main" | sudo tee -a /etc/apt/sources.list.d/trivy.list
sudo apt-get update
sudo apt-get install trivy -y
```

Optional if you want to install at Jenkins server for below: you can apply manually inside your server.

```
##install aws cli
curl "https://awscli.amazonaws.com/awscli-exe-linux-x86_64.zip" -o "awscliv2.zip"
sudo apt install unzip
unzip awscliv2.zip
sudo ./aws/install
aws --version


###eksctl
curl --silent --location "https://github.com/weaveworks/eksctl/releases/latest/download/e
ksctl_$(uname -s)_amd64.tar.gz" | tar xz -C /tmp
cd /tmp
sudo mv /tmp/eksctl /bin
eksctl version

##install kubectl
sudo apt update -y
sudo apt install curl -y
```

```
curl -LO https://dl.k8s.io/release/$(curl -L -s https://dl.k8s.io/release/stable.txt)/bin/linux/amd64/kubectl
sudo install -o root -g root -m 0755 kubectl /usr/local/bin/kubectl
kubectl version --client
```

after that , Go to the desire path (directory) to deploy with terraform (automation)

`/Users/teddyyekyawthu/Teddy-files/Netflix-clone-bubududu/Deploy-Netflix-Clone-on-Kubernetes/terraform-jenkins`

```
teddyyekyawthu@mac terraform-jenkins % terraform init
teddyyekyawthu@mac terraform-jenkins % terraform fmt
teddyyekyawthu@mac terraform-jenkins % terraform validate
teddyyekyawthu@mac terraform-jenkins % terraform plan

teddyyekyawthu@mac terraform-jenkins % terraform plan
aws_security_group.Jenkins-VM-SG: Refreshing state... [id=sg-0f1bfed39db942ac0]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated
with the following symbols:
  + create

Terraform will perform the following actions:

  # aws_instance.web will be created
  + resource "aws_instance" "web" {
      + ami                                  = "ami-06c4be2792f419b7b"
      + arn                                  = (known after apply)
      + associate_public_ip_address          = (known after apply)
      + availability_zone                    = (known after apply)
      + cpu_core_count                       = (known after apply)
      + cpu_threads_per_core                 = (known after apply)
      + disable_api_stop                     = (known after apply)
      + disable_api_termination              = (known after apply)
      + ebs_optimized                        = (known after apply)
      + enable_primary_ipv6                  = (known after apply)
      + get_password_data                    = false
      + host_id                              = (known after apply)
      + host_resource_group_arn              = (known after apply)
      + iam_instance_profile                 = (known after apply)
      + id                                   = (known after apply)
      + instance_initiated_shutdown_behavior = (known after apply)
      + instance_lifecycle                   = (known after apply)
      + instance_state                       = (known after apply)
      + instance_type                        = "t2.large"
      + ipv6_address_count                   = (known after apply)
      + ipv6_addresses                       = (known after apply)
```

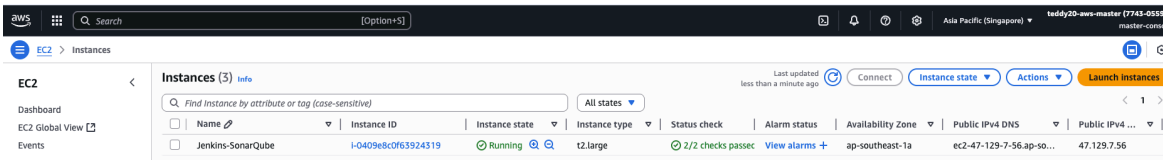
```
+ key_name                      = "cicd"
+ monitoring                    = (known after apply)
+ outpost_arn                   = (known after apply)
+ password_data                 = (known after apply)
+ placement_group               = (known after apply)
+ placement_partition_number    = (known after apply)
+ primary_network_interface_id  = (known after apply)
+ private_dns                   = (known after apply)
+ private_ip                    = (known after apply)
+ public_dns                    = (known after apply)
+ public_ip                     = (known after apply)
+ secondary_private_ips         = (known after apply)
+ security_groups               = (known after apply)
+ source_dest_check             = true
+ spot_instance_request_id      = (known after apply)
+ subnet_id                     = "subnet-0d01d8b3e2f5bf885"
+ tags                          = {
    + "Name" = "Jenkins-SonarQube"
  }
+ tags_all                      = {
    + "Name" = "Jenkins-SonarQube"
  }
+ tenancy                       = (known after apply)
+ user_data                     = "42caed7d96911f34b2ce87368273c798f00234f2"
+ user_data_base64              = (known after apply)
+ user_data_replace_on_change   = false
+ vpc_security_group_ids        = [
    + "sg-0f1bfed39db942ac0",
  ]

+ capacity_reservation_specification (known after apply)

+ cpu_options (known after apply)

+ ebs_block_device (known after apply)

+ enclave_options (known after apply)

+ ephemeral_block_device (known after apply)

+ instance_market_options (known after apply)

+ maintenance_options (known after apply)

+ metadata_options (known after apply)

+ network_interface (known after apply)
```

```
    + private_dns_name_options (known after apply)

    + root_block_device {
        + delete_on_termination = true
        + device_name           = (known after apply)
        + encrypted             = (known after apply)
        + iops                  = (known after apply)
        + kms_key_id            = (known after apply)
        + tags_all              = (known after apply)
        + throughput            = (known after apply)
        + volume_id             = (known after apply)
        + volume_size           = 40
        + volume_type           = (known after apply)
      }
  }

Plan: 1 to add, 0 to change, 0 to destroy.

teddyyekyawthu@mac terraform-jenkins % terraform apply --auto-approve
aws_security_group.Jenkins-VM-SG: Refreshing state... [id=sg-0f1bfed39db942ac0]

Terraform used the selected providers to generate the following execution plan. Resource
actions are indicated
with the following symbols:
  + create

Terraform will perform the following actions:

  # aws_instance.web will be created
  + resource "aws_instance" "web" {
      + ami                                  = "ami-06c4be2792f419b7b"
      + arn                                  = (known after apply)
      + associate_public_ip_address          = (known after apply)
      + availability_zone                    = (known after apply)
      + cpu_core_count                       = (known after apply)
      + cpu_threads_per_core                 = (known after apply)
      + disable_api_stop                     = (known after apply)
      + disable_api_termination              = (known after apply)
      + ebs_optimized                        = (known after apply)
      + enable_primary_ipv6                  = (known after apply)
      + get_password_data                    = false
      + host_id                              = (known after apply)
      + host_resource_group_arn              = (known after apply)
      + iam_instance_profile                 = (known after apply)
      + id                                   = (known after apply)
      + instance_initiated_shutdown_behavior = (known after apply)
```

```
+ instance_lifecycle                 = (known after apply)
+ instance_state                     = (known after apply)
+ instance_type                      = "t2.large"
+ ipv6_address_count                 = (known after apply)
+ ipv6_addresses                     = (known after apply)
+ key_name                           = "cicd"
+ monitoring                         = (known after apply)
+ outpost_arn                        = (known after apply)
+ password_data                      = (known after apply)
+ placement_group                    = (known after apply)
+ placement_partition_number         = (known after apply)
+ primary_network_interface_id       = (known after apply)
+ private_dns                        = (known after apply)
+ private_ip                         = (known after apply)
+ public_dns                         = (known after apply)
+ public_ip                          = (known after apply)
+ secondary_private_ips              = (known after apply)
+ security_groups                    = (known after apply)
+ source_dest_check                  = true
+ spot_instance_request_id           = (known after apply)
+ subnet_id                          = "subnet-0d01d8b3e2f5bf885"
+ tags                               = {
    + "Name" = "Jenkins-SonarQube"
  }
+ tags_all                           = {
    + "Name" = "Jenkins-SonarQube"
  }
+ tenancy                            = (known after apply)
+ user_data                          = "42caed7d96911f34b2ce87368273c798f00234f2"
+ user_data_base64                   = (known after apply)
+ user_data_replace_on_change        = false
+ vpc_security_group_ids             = [
    + "sg-0f1bfed39db942ac0",
  ]

+ capacity_reservation_specification (known after apply)

+ cpu_options (known after apply)

+ ebs_block_device (known after apply)

+ enclave_options (known after apply)

+ ephemeral_block_device (known after apply)

+ instance_market_options (known after apply)
```

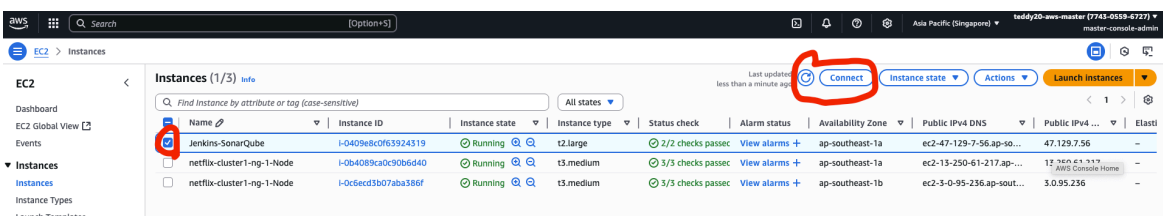
```
      + maintenance_options (known after apply)

      + metadata_options (known after apply)

      + network_interface (known after apply)

      + private_dns_name_options (known after apply)

      + root_block_device {
          + delete_on_termination = true
          + device_name           = (known after apply)
          + encrypted             = (known after apply)
          + iops                  = (known after apply)
          + kms_key_id            = (known after apply)
          + tags_all              = (known after apply)
          + throughput            = (known after apply)
          + volume_id             = (known after apply)
          + volume_size           = 40
          + volume_type           = (known after apply)
        }
    }

Plan: 1 to add, 0 to change, 0 to destroy.
aws_instance.web: Creating...
aws_instance.web: Still creating... [10s elapsed]
aws_instance.web: Creation complete after 13s [id=i-0409e8c0f63924319]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
```

then, we can go to check and see in our AWS → EC2 instance



you can login two ways as below: Option 1 (from aws) , Option 2 (by using .pem key-pair to access)

Option 1:



`systemctl status jenkins`

`ubuntu@ip-10-0-0-5:~$ aws --version`

`trivy version`

`eksctl version`

`docker version`

`docker ps`

```
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 6.5.0-1014-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

  System information as of Mon Aug 11 00:59:05 UTC 2025

  System load:  0.0               Processes:             119
  Usage of /:   27.3% of 38.58GB   Users logged in:       0
  Memory usage: 46%               IPv4 address for docker0: 172.17.0.1
  Swap usage:   0%                IPv4 address for eth0:    10.0.0.5

 * Ubuntu Pro delivers the most comprehensive open source security and
   compliance features.

   https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

69 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

1 additional security update can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

New release '24.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.


*** System restart required ***
Last login: Sun Aug 10 15:31:26 2025 from 3.0.5.37
ubuntu@ip-10-0-0-5:~$ systemctl status jenkins
● jenkins.service - Jenkins Continuous Integration Server
     Loaded: loaded (/lib/systemd/system/jenkins.service; enabled; vendor preset: enable
d)
     Active: active (running) since Sat 2025-08-09 05:35:41 UTC; 1 day 19h ago
   Main PID: 6067 (java)
      Tasks: 67 (limit: 9498)
```

```
     Memory: 1.2G
        CPU: 2h 10min 46.139s
     CGroup: /system.slice/jenkins.service
             ├─ 6067 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8080
             ├─117871 /usr/sbin/ "" "" "" "" "" "" "" "" "" "" ""
             └─117872 /usr/sbin/ "" "" "" "" "" "" "" "" "" "" ""

Aug 11 00:55:55 ip-10-0-0-5 jenkins[6067]:         at PluginClassLoader for kubernetes-credentials-provider//com.cloudbees.jenkins.plugins.kubernetes_credentials_provider.KubernetesCredentialProvider$1.doRun(Ku>
Aug 11 00:55:55 ip-10-0-0-5 jenkins[6067]:         at hudson.triggers.SafeTimerTask.run(SafeTimerTask.java:92)
Aug 11 00:55:55 ip-10-0-0-5 jenkins[6067]:         at jenkins.security.ImpersonatingScheduledExecutorService$1.run(ImpersonatingScheduledExecutorService.java:67)
Aug 11 00:55:55 ip-10-0-0-5 jenkins[6067]:         at java.base/java.util.concurrent.Executors$RunnableAdapter.call(Executors.java:572)
Aug 11 00:55:55 ip-10-0-0-5 jenkins[6067]:         at java.base/java.util.concurrent.FutureTask.run(FutureTask.java:317)
Aug 11 00:55:55 ip-10-0-0-5 jenkins[6067]:         at java.base/java.util.concurrent.ScheduledThreadPoolExecutor$ScheduledFutureTask.run(ScheduledThreadPoolExecutor.java:304)
Aug 11 00:55:55 ip-10-0-0-5 jenkins[6067]:         at java.base/java.util.concurrent.ThreadPoolExecutor.runWorker(ThreadPoolExecutor.java:1144)
Aug 11 00:55:55 ip-10-0-0-5 jenkins[6067]:         at java.base/java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.java:642)
Aug 11 00:55:55 ip-10-0-0-5 jenkins[6067]:         at java.base/java.lang.Thread.run(Thread.java:1583)
Aug 11 00:55:55 ip-10-0-0-5 jenkins[6067]: 2025-08-11 00:55:55.340+0000 [id=50]       INFO       c.c.j.p.k.KubernetesCredentialProvider#reconnectLater: Attempting to reco

ubuntu@ip-10-0-0-5:~$ aws --version
aws-cli/2.28.6 Python/3.13.4 Linux/6.5.0-1014-aws exe/x86_64.ubuntu.22
ubuntu@ip-10-0-0-5:~$ trivy version
Version: 0.65.0
ubuntu@ip-10-0-0-5:~$ eksctl version
0.212.0nnect Kubernetes client in 5 mins

ubuntu@ip-10-0-0-5:~$ docker version
Client:
 Version:           27.5.1
 API version:       1.47
 Go version:        go1.22.2
 Git commit:        27.5.1-0ubuntu3~22.04.2
 Built:             Mon Jun  2 12:18:38 2025
 OS/Arch:           linux/amd64
 Context:           default
```

```
Server:
 Engine:
  Version:          27.5.1
  API version:      1.47 (minimum version 1.24)
  Go version:       go1.22.2
  Git commit:       27.5.1-0ubuntu3~22.04.2
  Built:            Mon Jun  2 12:18:38 2025
  OS/Arch:          linux/amd64
  Experimental:     false
 containerd:
  Version:          1.7.27
  GitCommit:
 runc:
  Version:          1.2.5-0ubuntu1~22.04.1
  GitCommit:
 docker-init:
  Version:          0.19.0
  GitCommit:

  ubuntu@ip-10-0-0-5:~$ docker ps
CONTAINER ID   IMAGE                    COMMAND                  CREATED       STATUS       POR
TS                                NAMES
8c50e65fcd85   sonarqube:lts-community   "/opt/sonarqube/dock..."   43 hours ago   Up
43 hours   0.0.0.0:9000→9000/tcp, :::9000→9000/tcp   sonar
```

Option 2: (From our PC by using ssh with key-pairs)

my key-pair ".pem" is situated in Downloads file, so needs to go that path

teddyyekyawthu@mac Downloads % `ssh -i cicd.pem ubuntu@47.129.7.56`

```
ubuntu@ip-10-0-0-5:~$ Read from remote host 47.129.7.56: Connection reset by peer
Connection to 47.129.7.56 closed.
client_loop: send disconnect: Broken pipe
teddyyekyawthu@mac Downloads % ssh -i cicd.pem ubuntu@47.129.7.56
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 6.5.0-1014-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

  System information as of Mon Aug 11 01:10:16 UTC 2025

  System load:  0.00390625        Processes:             121
  Usage of /:   27.3% of 38.58GB   Users logged in:       1
  Memory usage: 46%                IPv4 address for docker0: 172.17.0.1
```

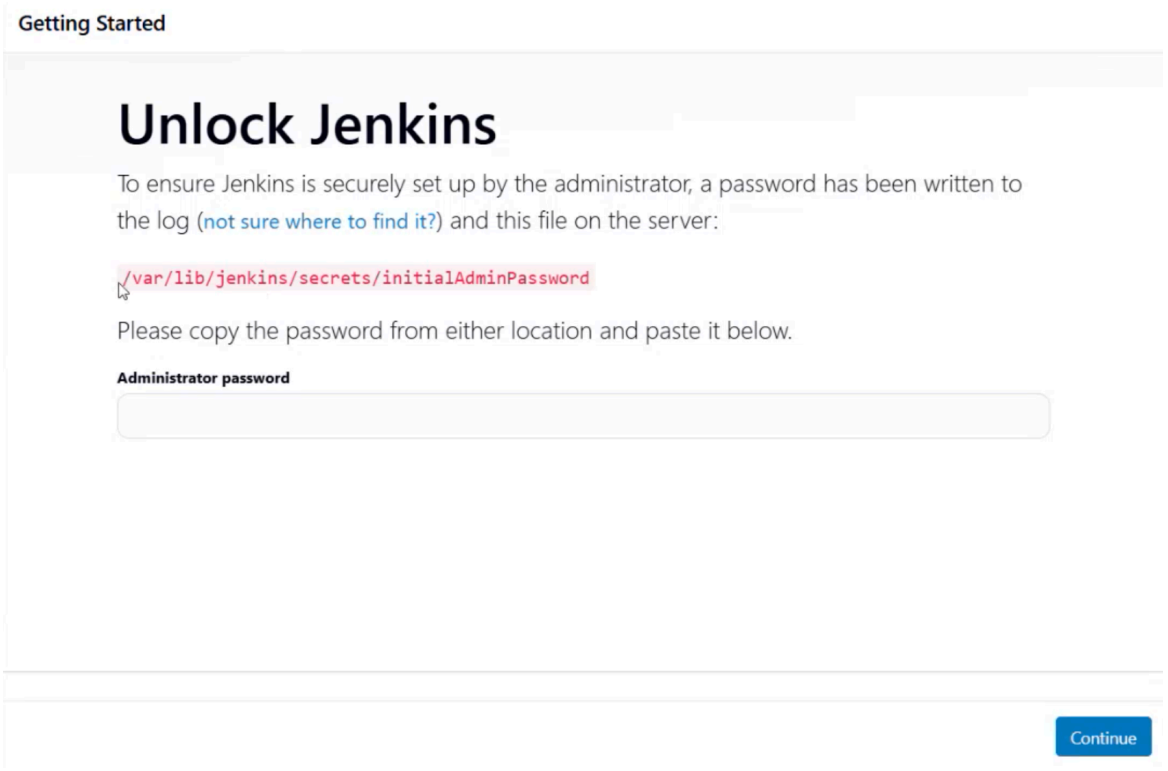
```
  Swap usage:   0%                IPv4 address for eth0:   10.0.0.5

 * Ubuntu Pro delivers the most comprehensive open source security and
   compliance features.

   https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

69 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

1 additional security update can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

New release '24.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.


*** System restart required ***
Last login: Mon Aug 11 00:59:06 2025 from 3.0.5.36
ubuntu@ip-10-0-0-5:~$
```

Access test to Jenkins & SonarQube from web-page

http://47.129.7.56:8080/ (IP will be changed according to our public IP)

http://47.129.7.56:9000/ (IP will be changed according to our public IP)

http://47.129.7.56:8080/ (Jenkins web)



then - default page is there - need to copy this path and find the password from our Jenkins EC2 server

`/var/lib/jenkins/secrets/initialAdminPassword`

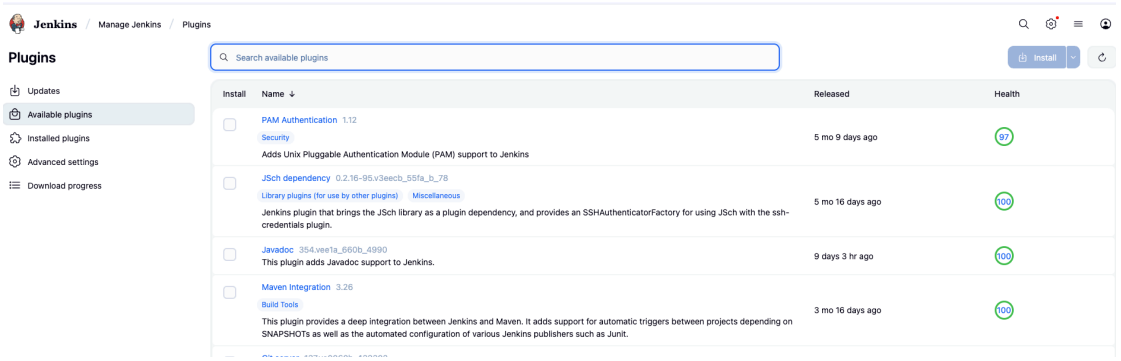
```
ubuntu@ip-10-0-0-5:~$ sudo cat /var/lib/jenkins/secrets/initialAdminPassword
e3723da9d8cb49ddac260181b46620d7
```

Jenkins Setup

1. Access Jenkins at `http://<public-ip>:8080` and install suggested plugins.
2. Install the following Jenkins plugins:
    - `Eclipse Temurin installer`
    - `SonarQube Scanner`
    - `Sonar Quality Gates`
    - `NodeJS`
    - `Docker, Docker Commons, Docker Pipeline, Docker API`
    - `Kubernetes, Kubernetes Credentials, Kubernetes Client API, Kubernetes CLI`
    - `Pipeline: Stage View`
    - `Blue Ocean`
    - `AWS Credentials`
    - `Prometheus metrics`

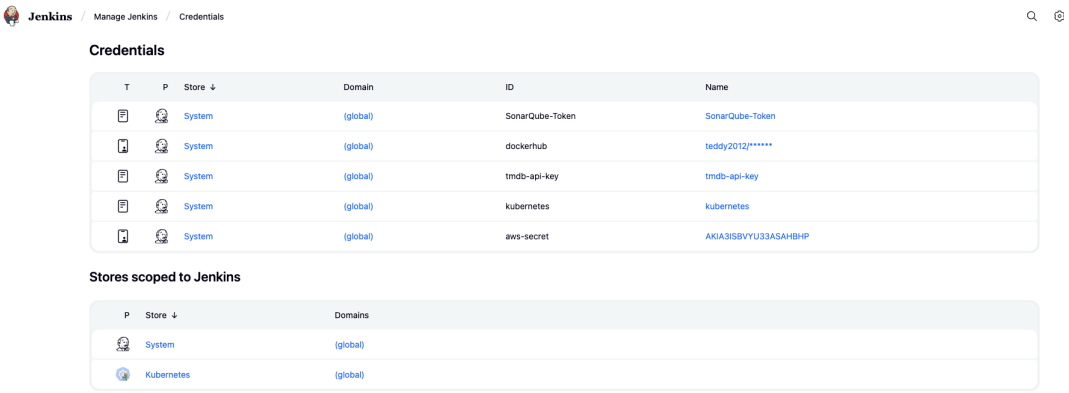
- OWASP Dependency-Check

install plug-in sample



Obtain an NVD API Key

- **Request an API Key**:
  - Go to the NVD API Key Request Page.
  - Fill out the form with your details (e.g., name, email, organization).
  - You'll receive an API key via email (usually within minutes).
- **Add API Key to Jenkins**:
  - In Jenkins, go to **Manage Jenkins > Manage Plugins > Credentials > System > Global Credentials**



  - Click **Add Credentials**.
  - Set:
    - **Kind**: Secret text
    - **Secret**: Paste the NVD API key
    - **ID**: nvd-api-key
    - **Description**: NVD API Key for Dependency-Check
  - Save the credential.

before configuring tools , need to check with below Jenkins (Can be referred the video CICD Pipeline with Jenkins)

```
pipeline {
    agent any

    parameters {
        string(name: 'MAJOR_VERSION', defaultValue: '1', description: 'Major version for the Docker image tag (e.g., 1 for v1.x)')
    }

    tools {
        jdk 'jdk21'
        nodejs 'node20'
    }

    environment {
        SCANNER_HOME = tool 'sonarqube-scanner'
        TRIVY_HOME = '/usr/bin'
        REPO_URL = 'https://github.com/TEDDY201289/Netflix-test.git'
        REPO_BRANCH = 'main'
        DOCKER_IMAGE_NAME = 'teddy2012/netflix-bubudu'
        SONAR_PROJECT_NAME = 'Netflix'
        SONAR_PROJECT_KEY = 'Netflix'
        DOCKER_CREDENTIALS_ID = 'dockerhub'
        SONAR_CREDENTIALS_ID = 'SonarQube-Token'
        KUBERNETES_CREDENTIALS_ID = 'kubernetes'
        SONAR_SERVER = 'SonarQube-Server'
        DOCKER_TOOL_NAME = 'docker'
        TRIVY_FS_REPORT = 'trivyfs.txt'
        TRIVY_IMAGE_REPORT = 'trivyimage.txt'
        K8S_NAMESPACE = 'default'
        APP_NAME = 'netflix'
    }

    stages {
        stage('Clean Workspace') {
            steps {
                cleanWs()
            }
            post {
                always {
                    echo "Workspace cleaned successfully"
                }
            }
        }
        stage('Checkout from Git') {
```

```
        steps {
            git branch: "${REPO_BRANCH}", url: "${REPO_URL}", credentialsId: 'gith
ub-credentials'
        }
    }
    stage('SonarQube Analysis') {
        steps {
            withSonarQubeEnv(credentialsId: "${SONAR_CREDENTIALS_ID}", installa
tionName: "${SONAR_SERVER}") {
                sh """
                ${SCANNER_HOME}/bin/sonar-scanner \
                    -Dsonar.projectName=${SONAR_PROJECT_NAME} \
                    -Dsonar.projectKey=${SONAR_PROJECT_KEY}
                """
            }
        }
    }
    stage('Quality Gate') {
        steps {
            script {
                waitForQualityGate abortPipeline: false, credentialsId: "${SONAR_CRE
DENTIALS_ID}"
            }
        }
    }
    stage('Install Dependencies') {
        steps {
            script {
                def nodeHome = tool name: 'node20', type: 'nodejs'
                env.PATH = "${nodeHome}/bin:${env.PATH}"
                sh "node --version"
                sh "npm --version"
                sh "npm install"
            }
        }
        post {
            failure {
                echo "Failed to install dependencies. Check Node.js setup or package.
json."
            }
        }
    }
    // stage('OWASP Dependency Check') {
    //     steps {
    //         withCredentials([string(credentialsId: 'nvd-api-key', variable: 'NVD_API
_KEY')]) {
    //             dependencyCheck additionalArguments: "--scan ./ --disableYarnAu
```

```
dit --disableNodeAudit --nvdApiKey ${NVD_API_KEY}", odcInstallation: 'DP-Chec
k'
      //           dependencyCheckPublisher pattern: '**/dependency-check-report.
xml'
      //       }
      //    }
      // }
      stage('Trivy FS Scan') {
         steps {
            script {
               sh "${TRIVY_HOME}/trivy fs . > ${TRIVY_FS_REPORT}"
            }
         }
         post {
            always {
               archiveArtifacts artifacts: "${TRIVY_FS_REPORT}", allowEmptyArchive:
true
            }
         }
      }
      stage('Set Version') {
         steps {
            script {
               def buildNumber = env.BUILD_NUMBER ?: '0'
               env.IMAGE_TAG = "v${params.MAJOR_VERSION}.${buildNumber}"
               echo "Docker image will be tagged as: ${DOCKER_IMAGE_NAME}:${e
nv.IMAGE_TAG}"
            }
         }
      }
      stage('Docker Build & Push') {
         steps {
            withCredentials([string(credentialsId: 'tmdb-api-key', variable: 'TMDB_A
PI_KEY')]) {
               script {
                  withDockerRegistry(credentialsId: "${DOCKER_CREDENTIALS_ID}",
toolName: "${DOCKER_TOOL_NAME}") {
                     sh "docker build -t ${APP_NAME} --build-arg TMDB_V3_API_KEY
=${TMDB_API_KEY} ."
                     sh "docker tag ${APP_NAME} ${DOCKER_IMAGE_NAME}:${env.I
MAGE_TAG}"
                     sh "docker push ${DOCKER_IMAGE_NAME}:${env.IMAGE_TAG}"
                  }
               }
            }
         }
         post {
```

```
            always {
                sh "docker rmi ${APP_NAME} ${DOCKER_IMAGE_NAME}:${env.IMAG
E_TAG} || true"
            }
        }
    }
    stage('Trivy Image Scan') {
        steps {
            script {
                sh "${TRIVY_HOME}/trivy image ${DOCKER_IMAGE_NAME}:${env.IM
AGE_TAG} > ${TRIVY_IMAGE_REPORT}"
            }
        }
        post {
            always {
                archiveArtifacts artifacts: "${TRIVY_IMAGE_REPORT}", allowEmptyArc
hive: true
            }
        }
    }
    stage('Deploy to Kubernetes') {
        steps {
            withCredentials([[
                $class: 'AmazonWebServicesCredentialsBinding',
                credentialsId: 'aws-secret'
            ]]) {
                script {
                    dir('Kubernetes') {
                        withKubeConfig(
                            credentialsId: "${KUBERNETES_CREDENTIALS_ID}",
                            serverUrl: 'https://ABCD027AC4657D748C746D37AC3C7DFE.g
r7.ap-southeast-1.eks.amazonaws.com', // Replace with actual EKS endpoint
                            namespace: "${K8S_NAMESPACE}"
                        ) {
                            sh 'kubectl version'
                            sh "sed -i 's|image: ${DOCKER_IMAGE_NAME}:.*|image: ${DO
CKER_IMAGE_NAME}:${env.IMAGE_TAG}|' deployment.yml"
                            sh 'kubectl apply -f deployment.yml'
                            sh 'kubectl apply -f service.yml'
                        }
                    }
                }
            }
        }
    }
}
post {
```

```
        always {
            emailext attachLog: true,
                subject: "'${currentBuild.result}'",
                body: "Project: ${env.JOB_NAME}<br/>" +
                    "Build Number: ${env.BUILD_NUMBER}<br/>" +
                    "URL: ${env.BUILD_URL}<br/>",
                to: 'hlaingminpaing.ygn@gmail.com', // Update with your email
                attachmentsPattern: 'trivyfs.txt,trivyimage.txt'
        }
    }
}
```

3. Configure tools in Jenkins:

   sample screenshots:

   - **NodeJS**: Add NodeJS 20 installation (`node20`).
   - **JDK**: Add JDK 21 installation (`jdk21`).
   - **Docker**: Configure Docker installation (`docker`).
   - **SonarQube Scanner**: Add SonarQube Scanner installation (`sonarqube-scanner`).
   - **Dependency-Check**: Add Dependency-Check installation (`DP-Check`), install automatically from GitHub.

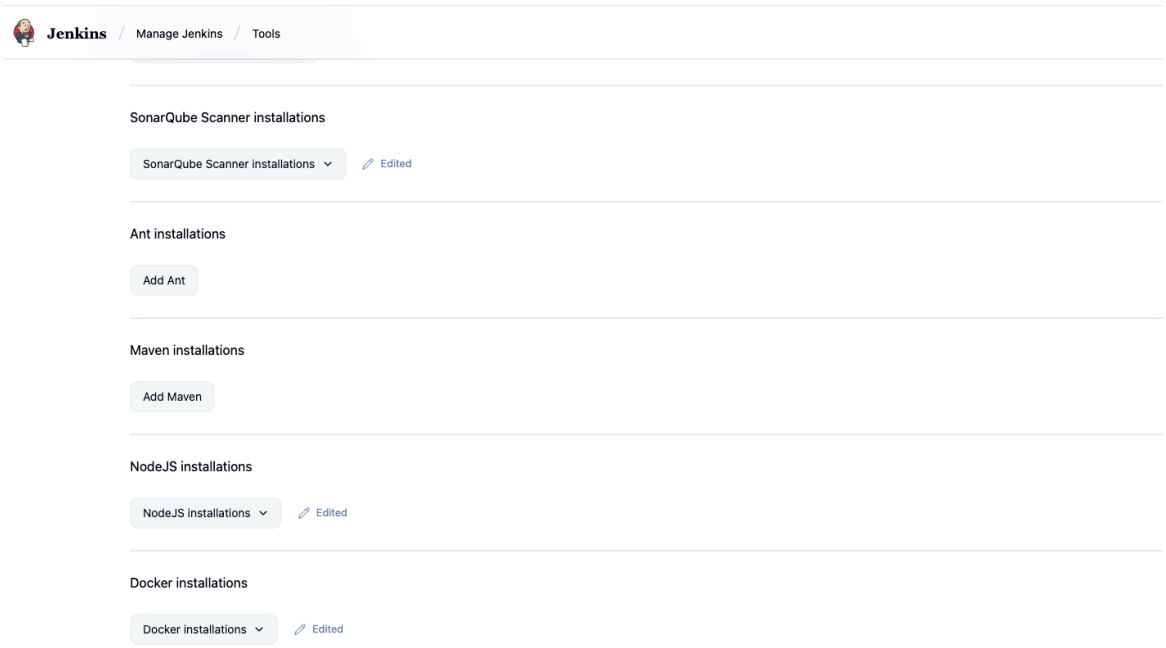
4. Generate a SonarQube token:
   - Log in to SonarQube at `http://<public-ip>:9000`.
   - Navigate to **User > My Account > Security > Generate Tokens**.
   - Copy the token and add it as a secret in Jenkins (Credentials ID: `SonarQube-Token`).

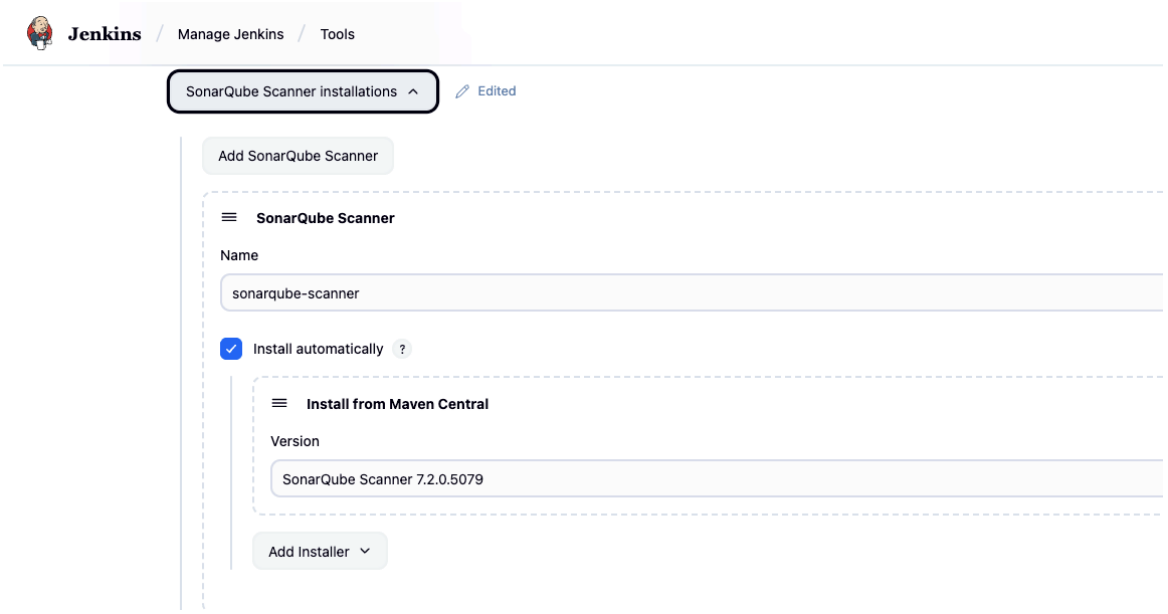
5. Add credentials in Jenkins:

- **Docker Hub**: Add Docker Hub credentials (Credentials ID: `dockerhub`).
- **GitHub**: Add GitHub credentials (Credentials ID: `github-credentials`).
- **AWS**: Add AWS credentials (Credentials ID: `aws-secret`).
- **Kubernetes**: Copy `/home/ubuntu/.kube/config` and save as a secret (Credentials ID: `kubernetes`).
- **TMDB API Key**: Add the TMDB API key as a secret text (Credentials ID: `tmdb-api-key`).

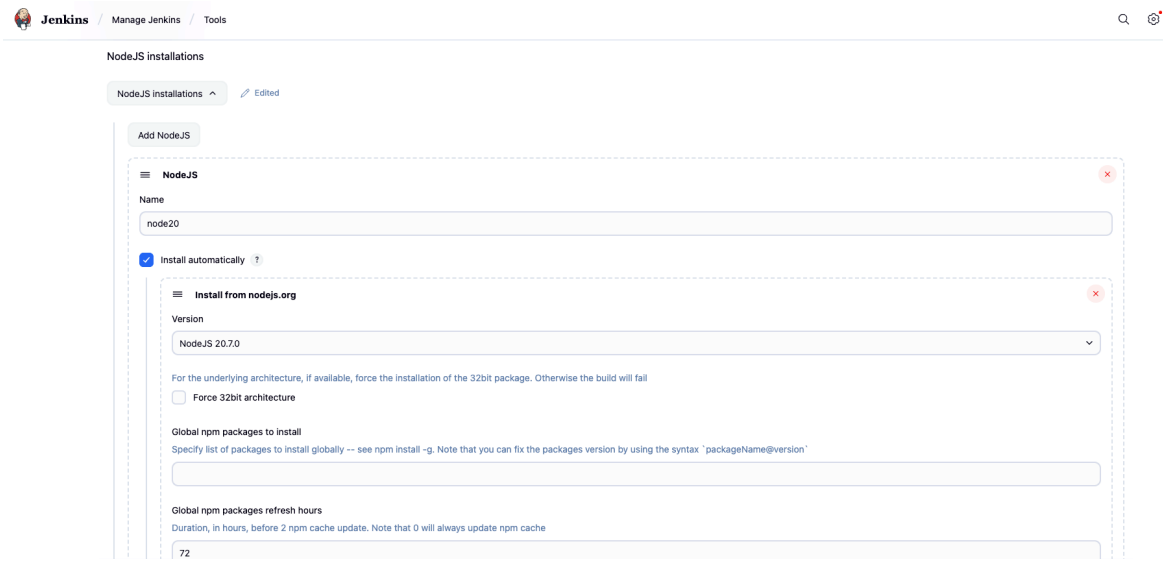
6. Configure environment variables in Jenkins for SonarQube and Docker.
   - **SonarQube servers:** SonarQube server configuration (URL: `http://<public-ip>:9000`, Name: `SonarQube-Server`
7. Set up a webhook in SonarQube:
   - Navigate to **Administration > Configuration > Webhooks**.
   - Add a webhook with the URL: `http://<jenkins-public-ip>:8080/sonarqube-webhook/`.
8. Create a SonarQube project and quality gate:
   - In SonarQube, create a new project (Name: `Netflix`, Key: `Netflix`).
   - Configure a quality gate with desired metrics (e.g., code coverage, vulnerabilities).

`SonarQube scanner & Sonar Qube`

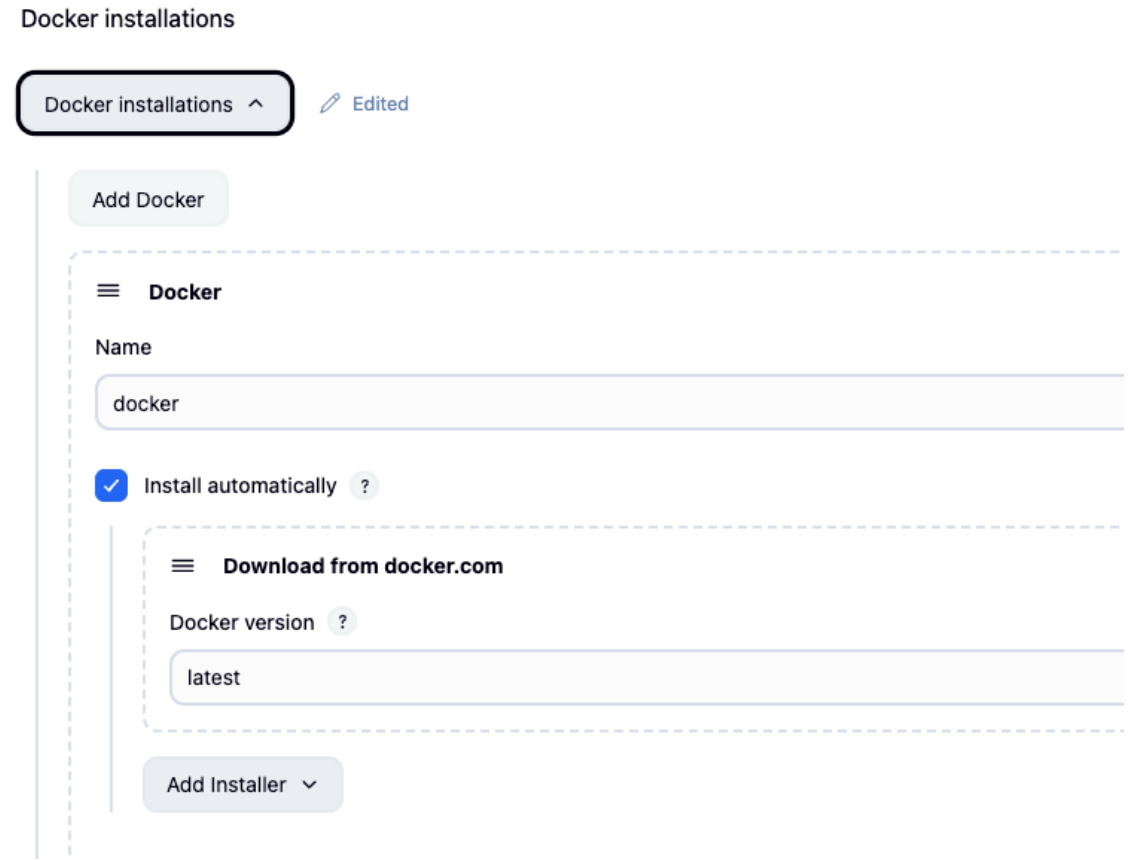




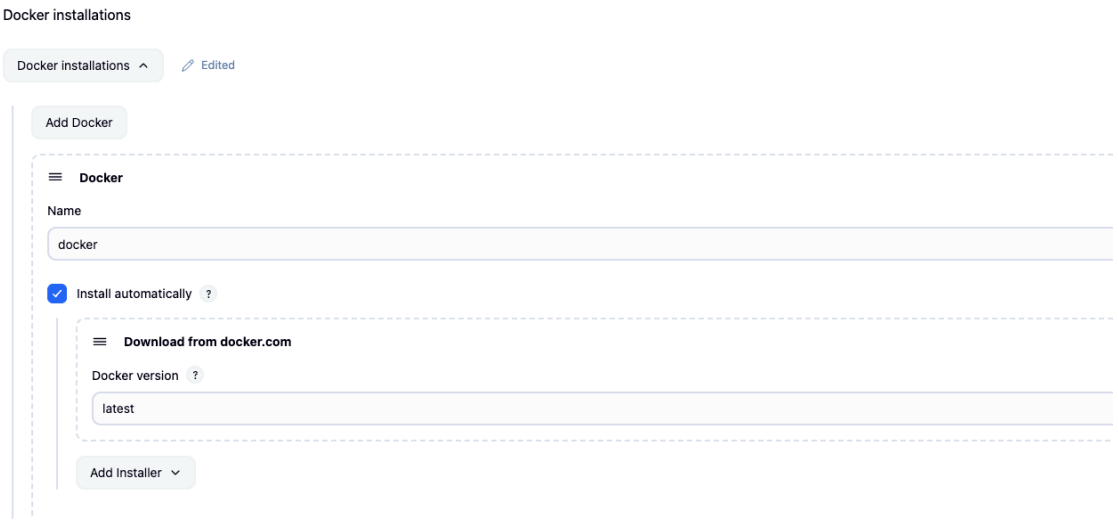
NodeJS

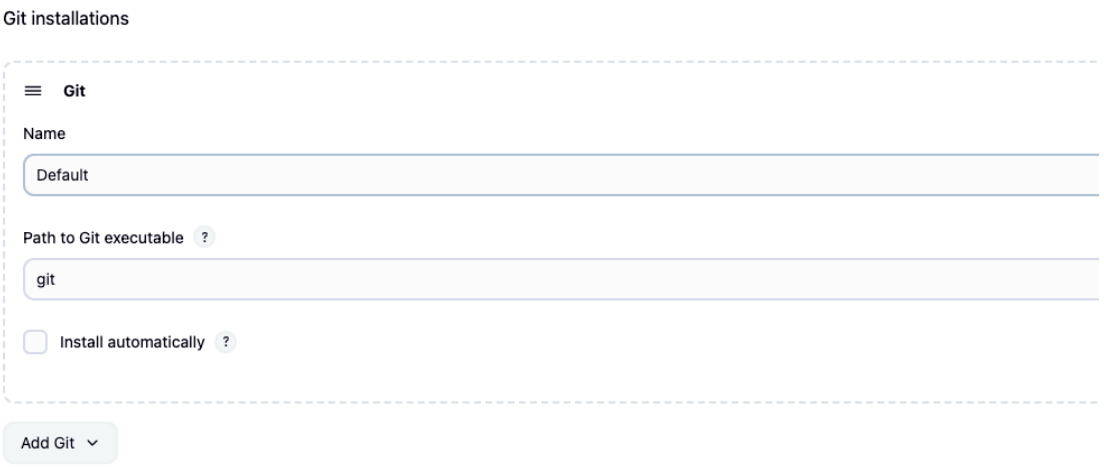


Docker

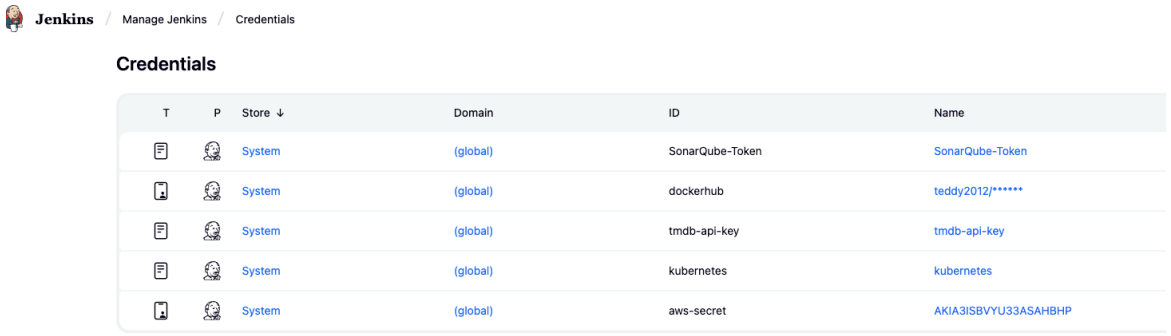

Docker installations
Docker installations
Edited
Add Docker
Docker
Name
docker
Install automatically
Download from docker.com
Docker version
latest
Add Installer

Git

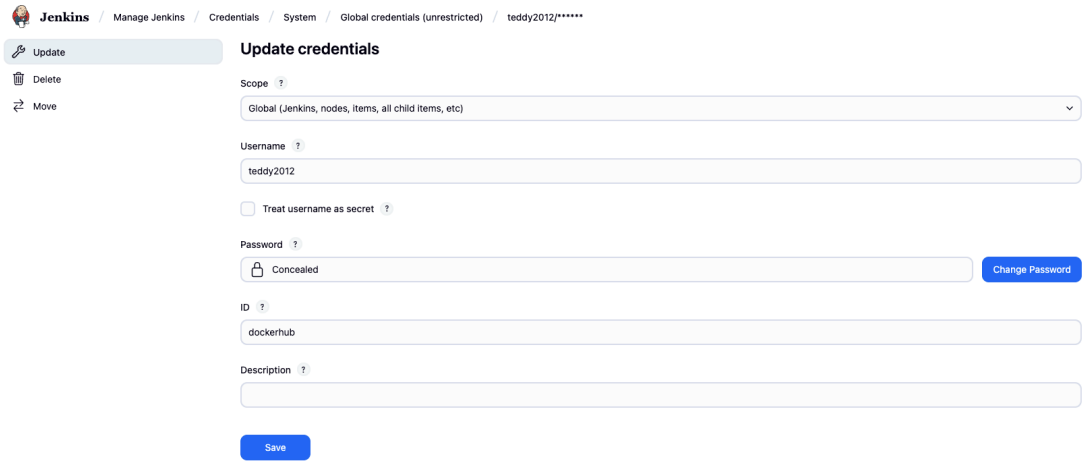

Docker installations
Docker installations
Edited
Add Docker
Docker
Name
docker
Install automatically
Download from docker.com
Docker version
latest
Add Installer

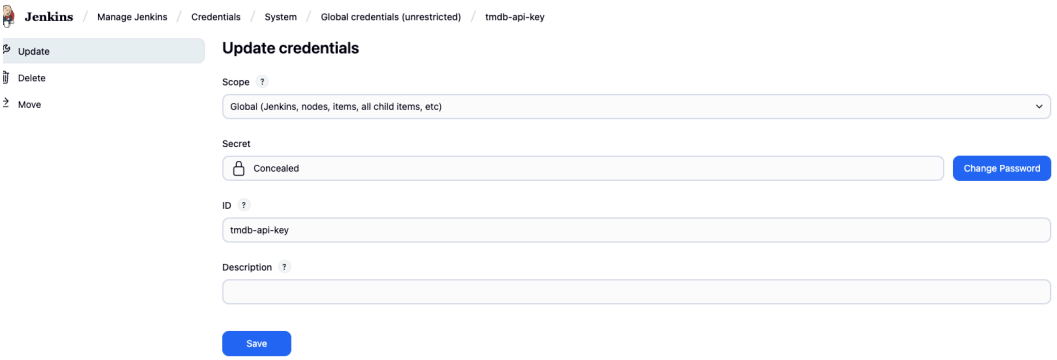


Add Credentials according to the Jenkins file (Docker, Github, SonarQube-token, Tmdb-api-key, Kubernetes and AWS)



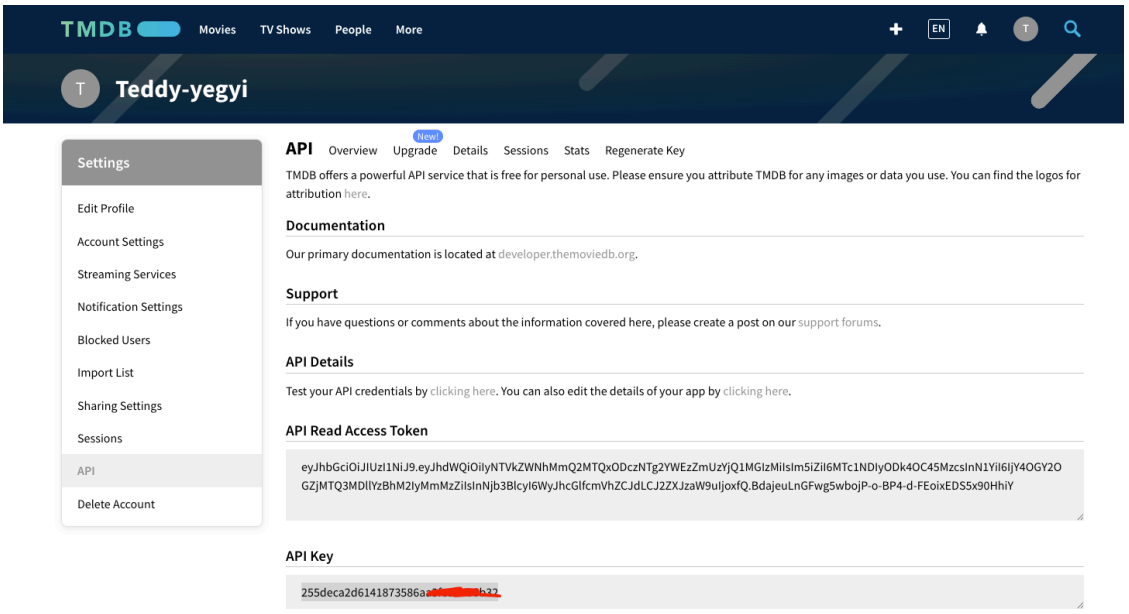
sample for docker



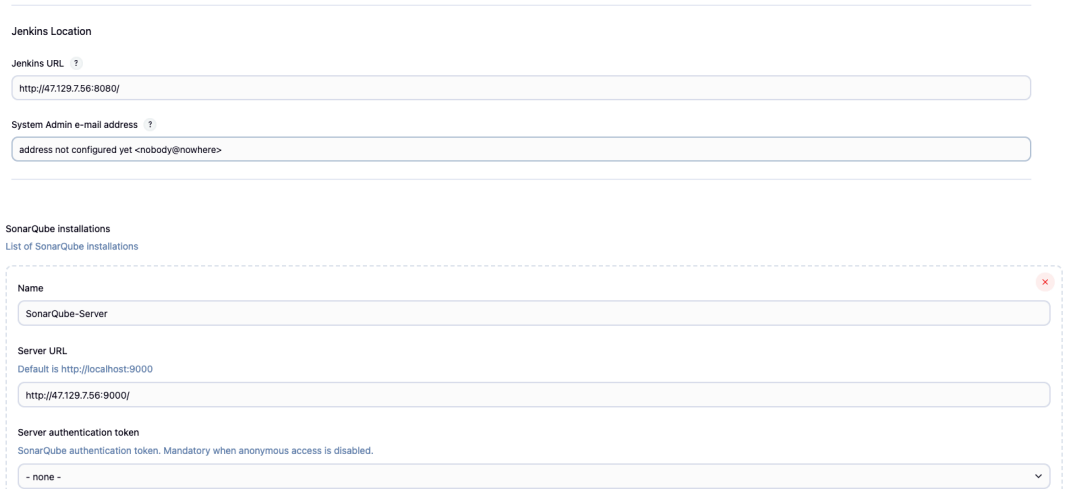


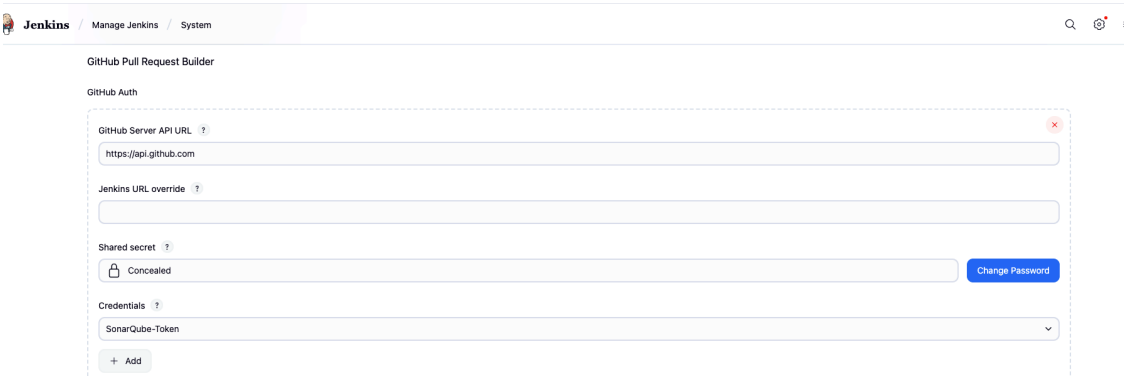
TMTDB (account should be created and go to this setting)

https://www.themoviedb.org/settings/api



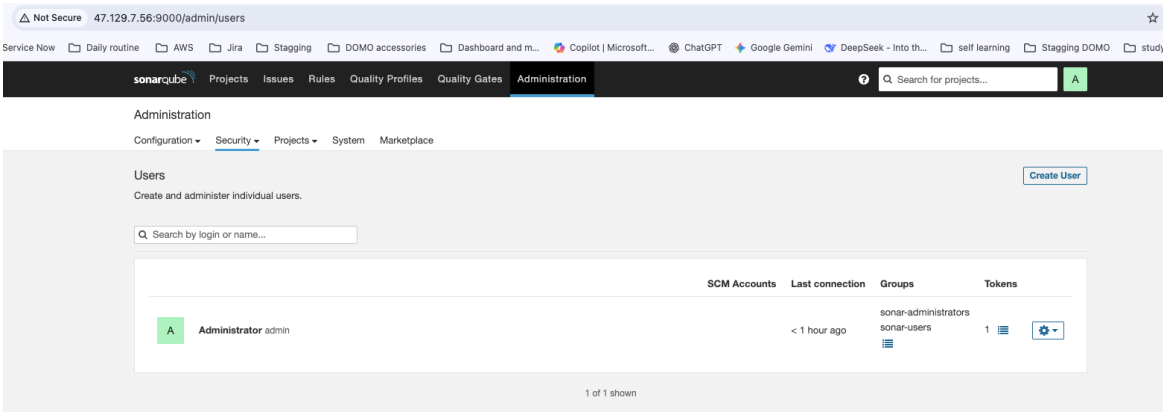
Go to Jenkins >>> Managed Jenkins >>> System

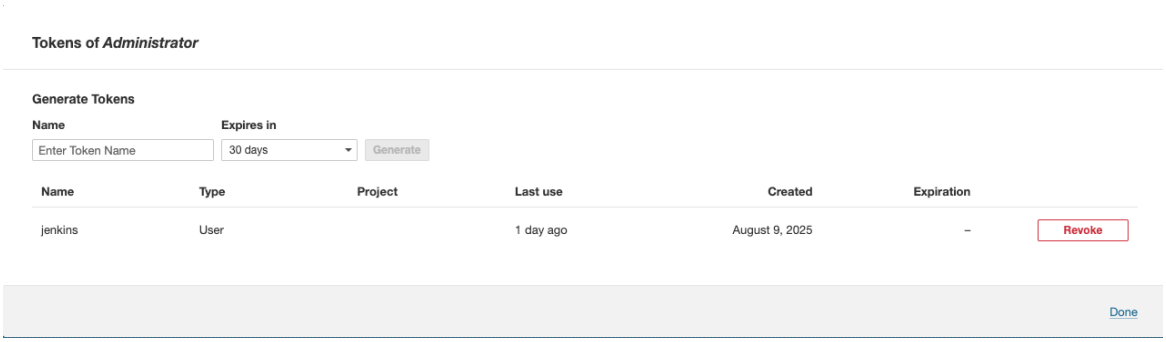




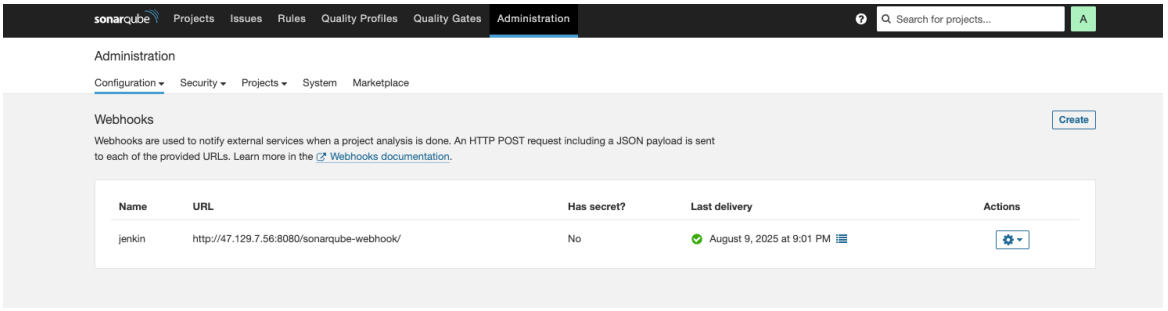
Then go to access http://47.129.7.56:9000/admin/webhooks (IP will be changed)

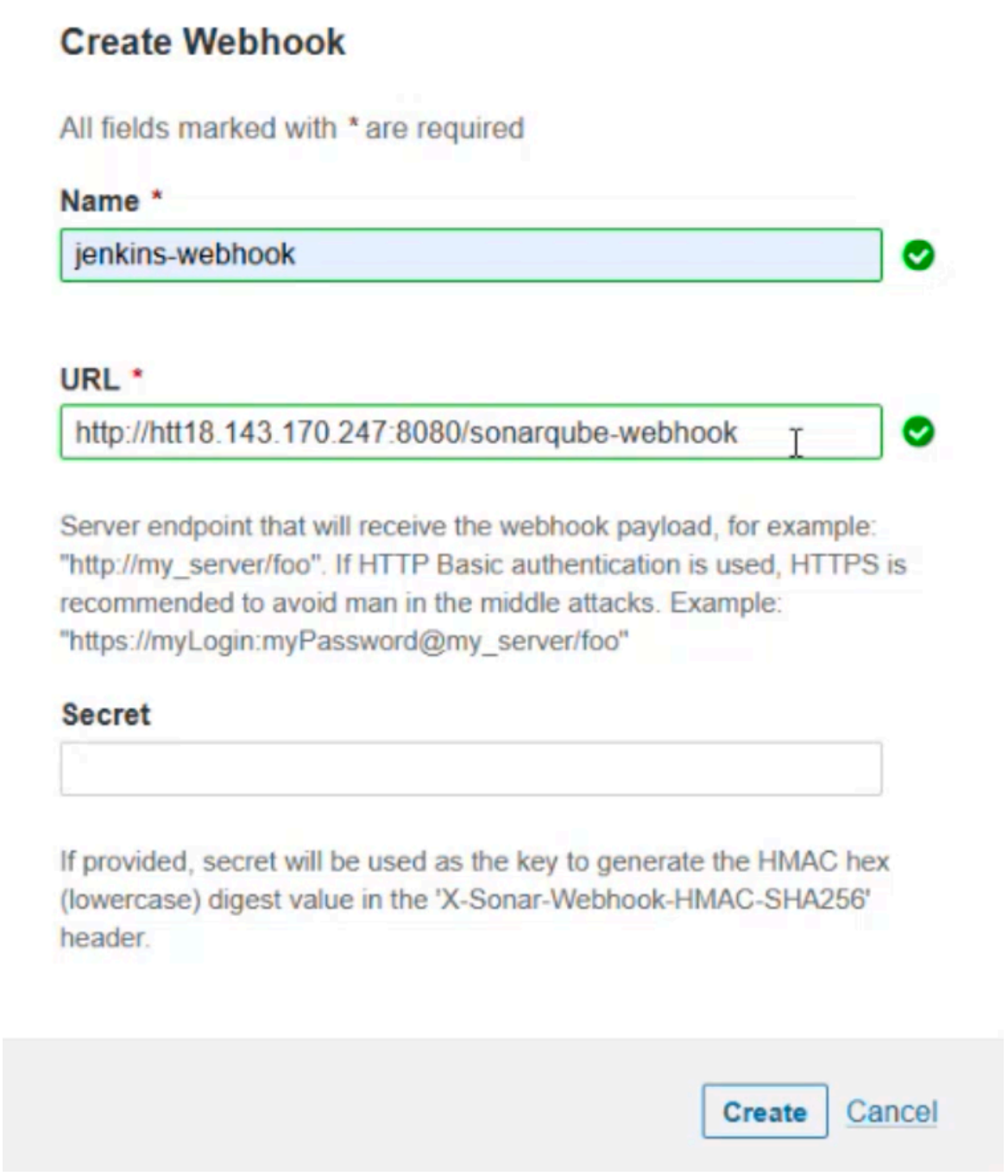
Default username and password - admin / admin



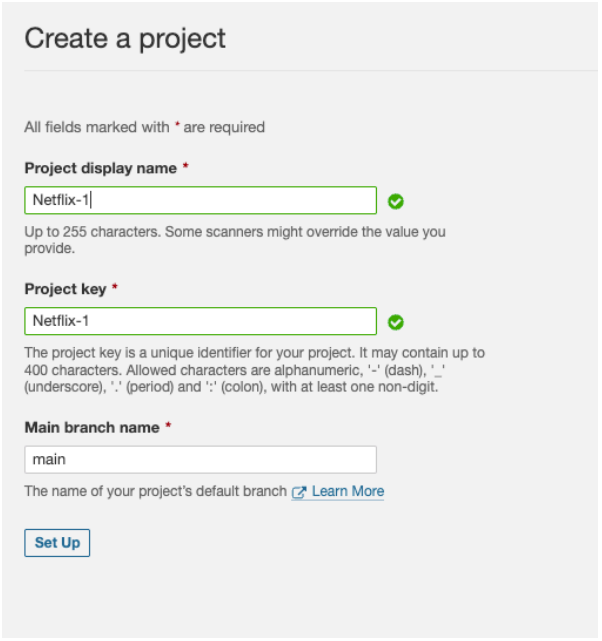


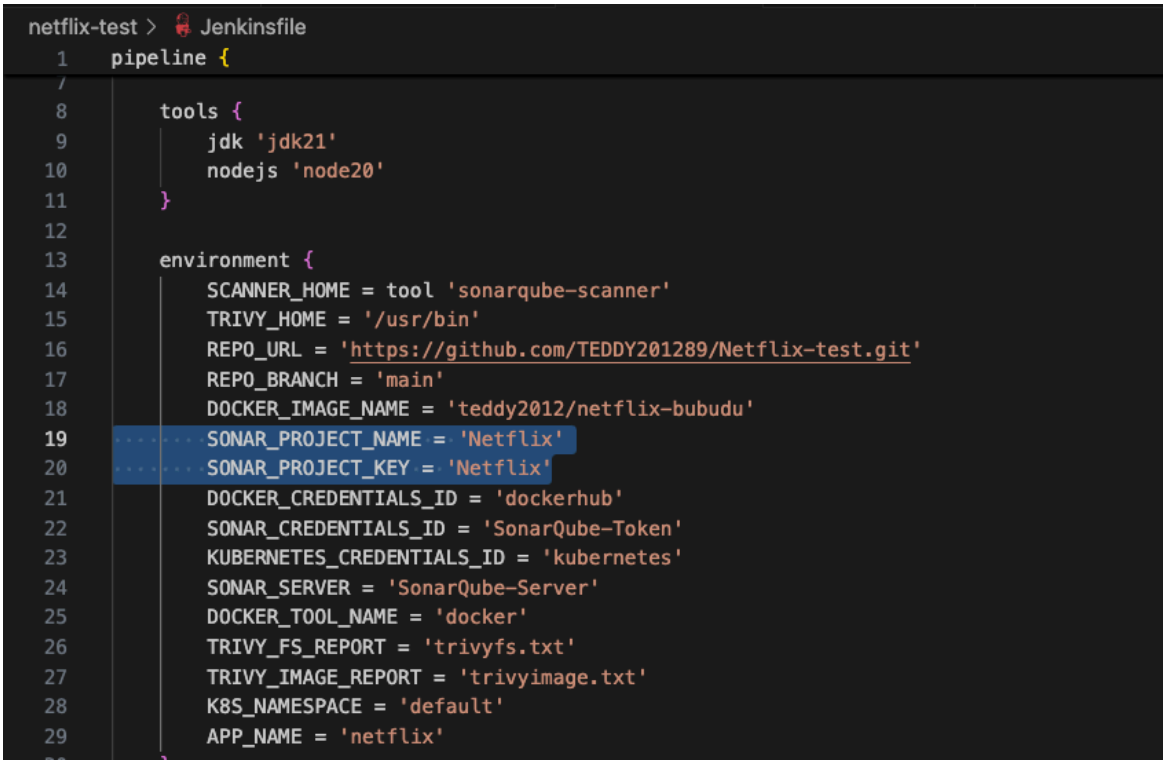
Create webhook to authenticate with Jenkins





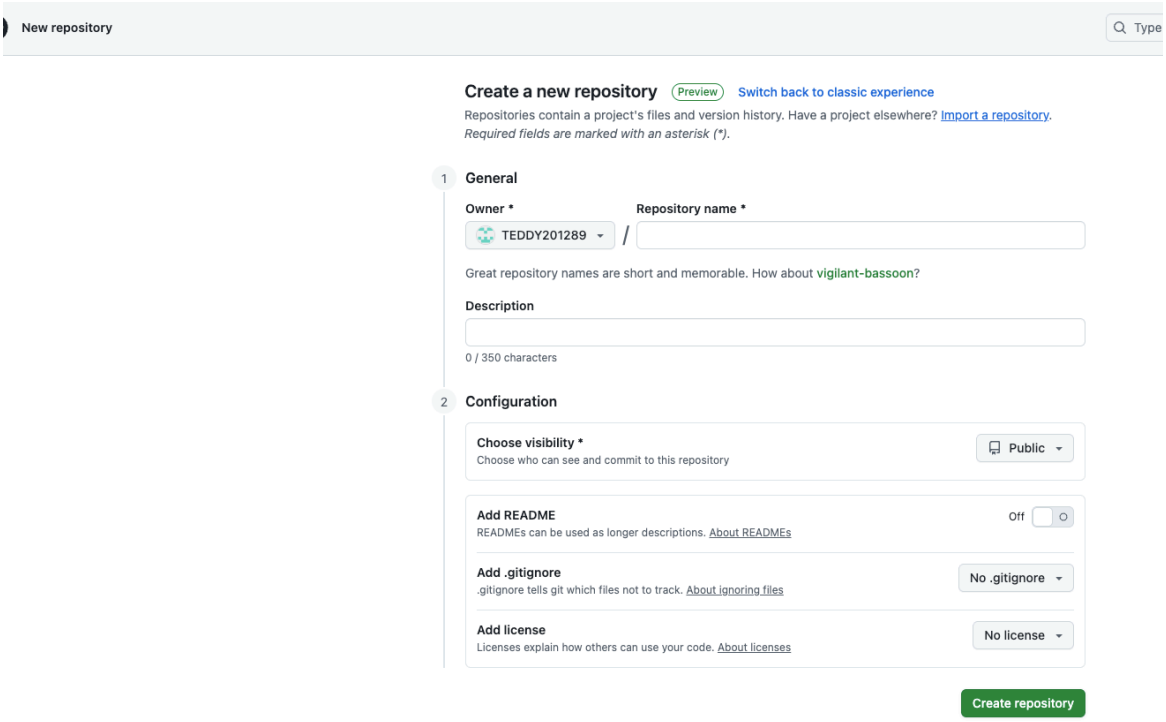
To do Quality gate - Go to Manual code >> Create Project

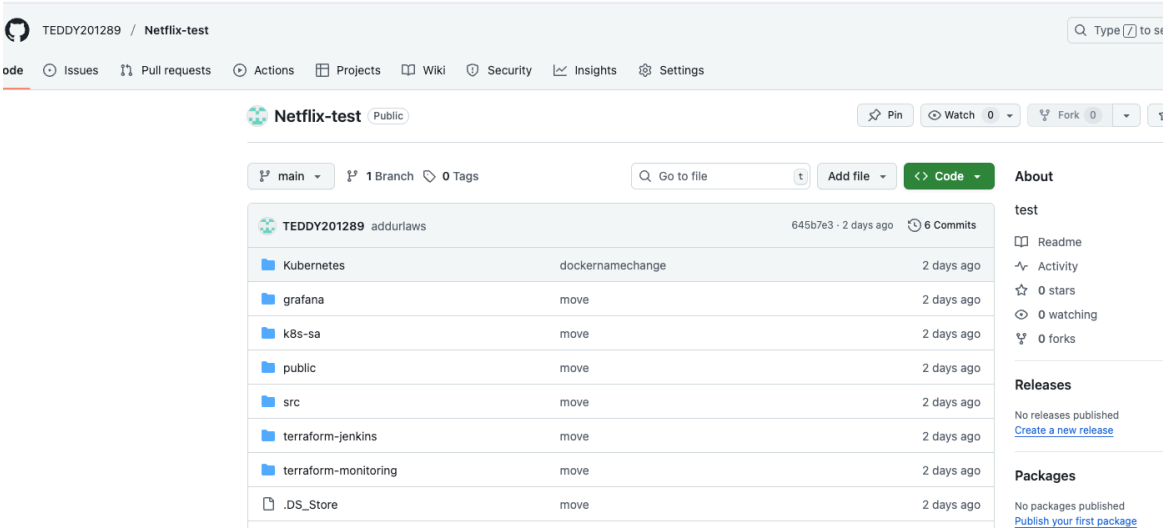




Then we go to GitHub account:

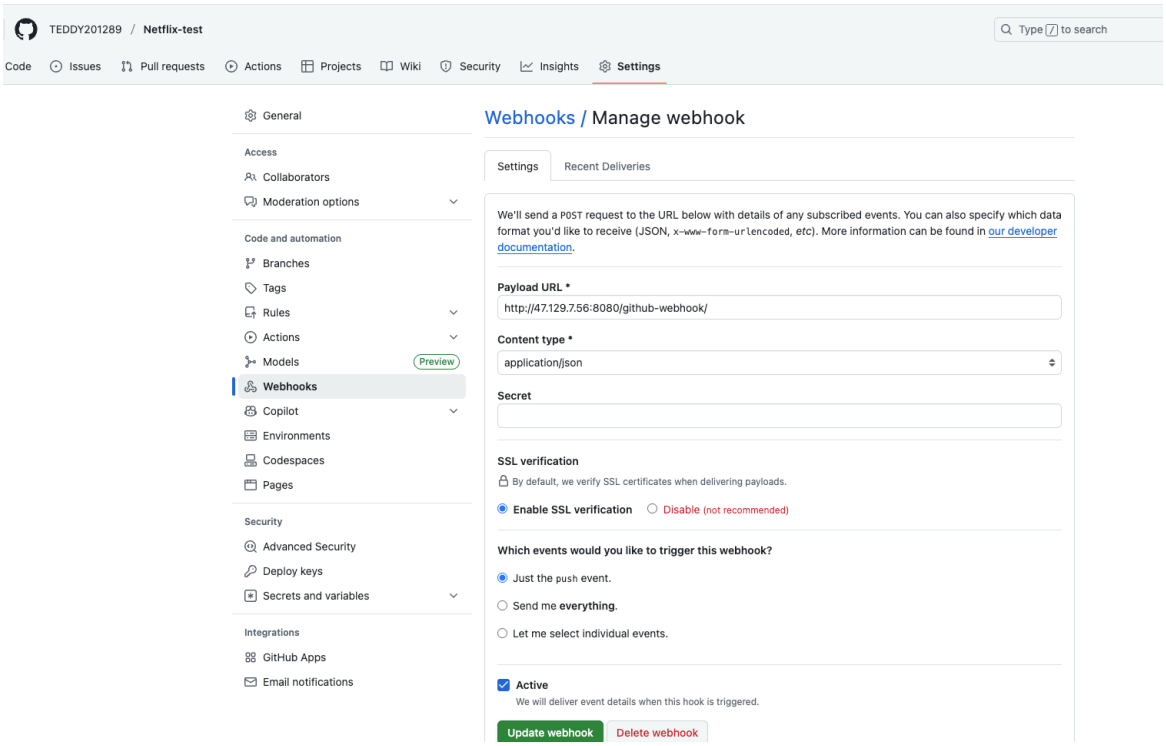
Create Repo from UI



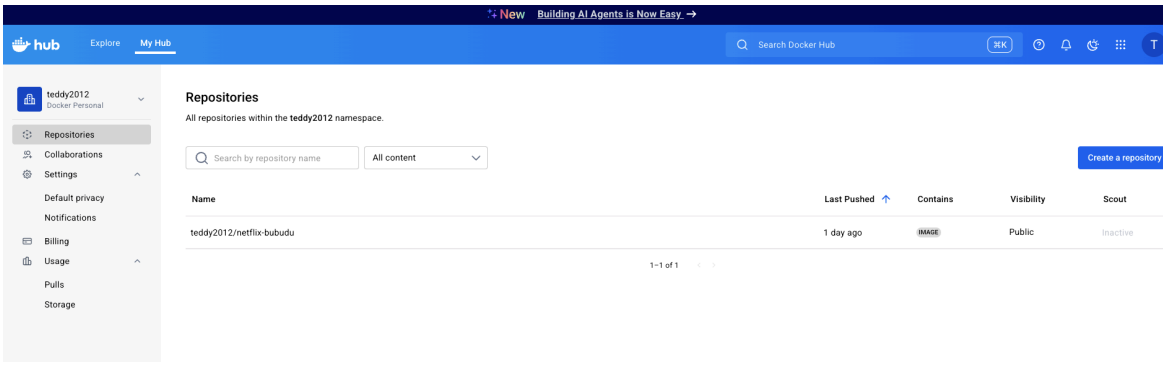


https://github.com/TEDDY201289/Netflix-test/settings/hooks/562924452?tab=settings

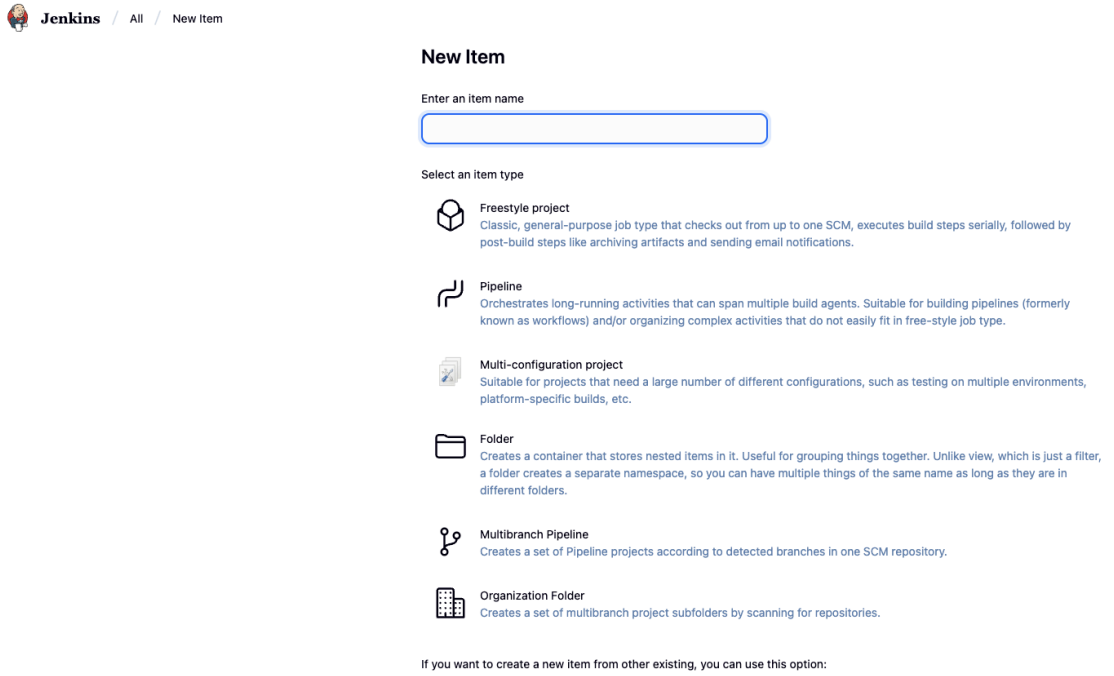
Add webhook with payload URL (jenkins) to get automated triggering for CI between GitHub and Jenkins

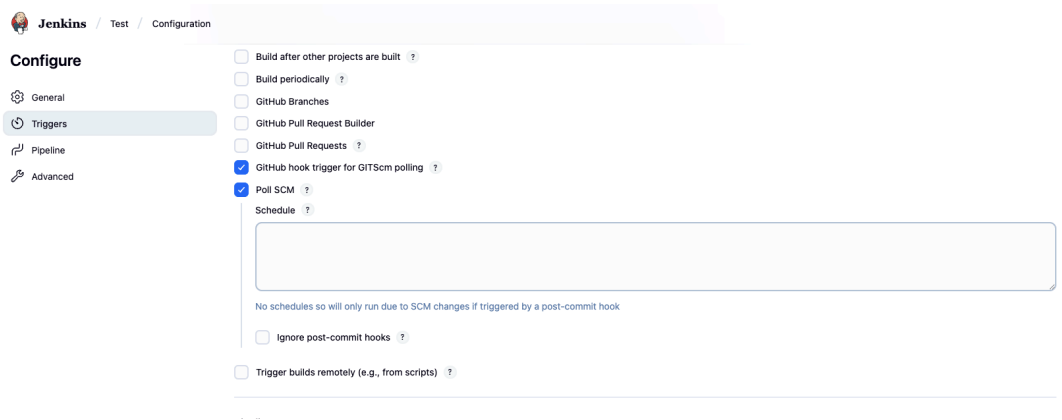


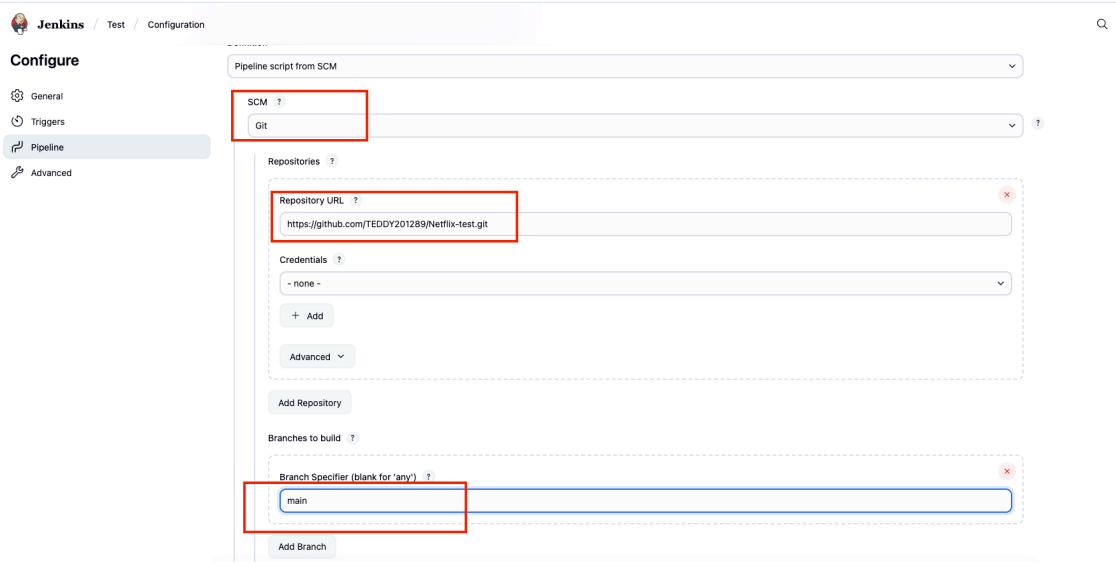
Then , Go to Docker hub, and create new repo

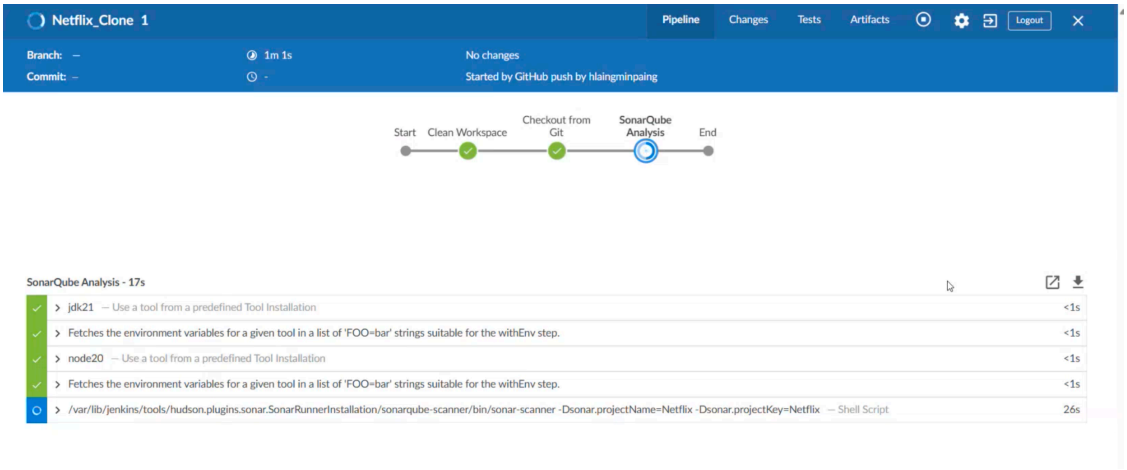


Create Pipeline


Jenkins / All / New Item
New Item
Enter an item name
Select an item type
Freestyle project
Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.
Pipeline
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.
Multi-configuration project
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.
Folder
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.
Multibranch Pipeline
Creates a set of Pipeline projects according to detected branches in one SCM repository.
Organization Folder
Creates a set of multibranch project subfolders by scanning for repositories.
If you want to create a new item from other existing, you can use this option:


Jenkins / Test / Configuration
Configure
General
Triggers
Pipeline
Advanced
Build after other projects are built
Build periodically
GitHub Branches
GitHub Pull Request Builder
GitHub Pull Requests
GitHub hook trigger for GITScm polling
Poll SCM
Schedule
No schedules so will only run due to SCM changes if triggered by a post-commit hook
Ignore post-commit hooks
Trigger builds remotely (e.g., from scripts)


Jenkins / Test / Configuration
Configure
General
Triggers
Pipeline
Advanced
Pipeline script from SCM
SCM
Git
Repositories
Repository URL
https://github.com/TEDDY201289/Netflix-test.git
Credentials
- none -
Add
Advanced
Add Repository
Branches to build
Branch Specifier (blank for 'any')
main
Add Branch



Now, we gonna to set up for EKS cluster as below:

Install eksctl

```
curl --silent --location "https://github.com/weaveworks/eksctl/releases/latest/download/eksctl_$(uname -s)_amd64.tar.gz" | tar xz -C /tmp
cd /tmp
sudo mv /tmp/eksctl /bin
eksctl version
```

Create Cluster

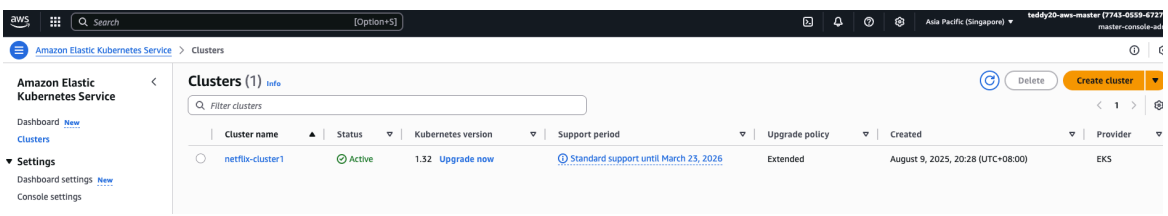
```
eksctl create cluster --name netflix-cluster \
--region us-east-1 \
--node-type t3.large \
--nodes 3
--profile teddy-kube
```

Wait for 30 mins minimum then Cluster is up

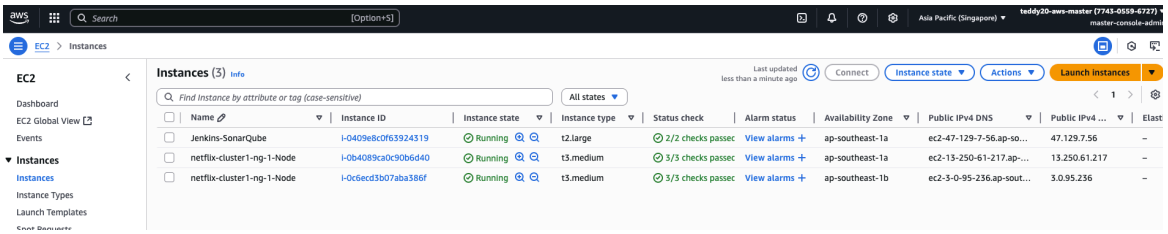
Verify Cluster

```
kubectl get nodes
kubectl get svc
```

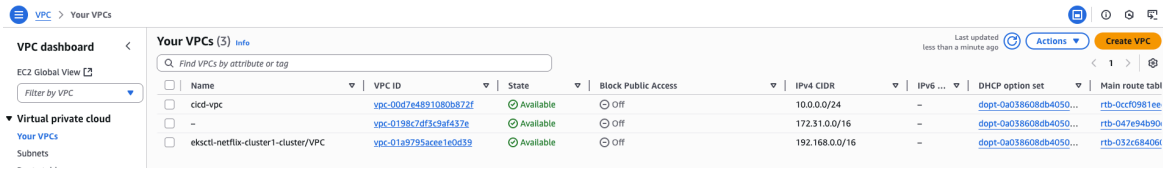
EKS



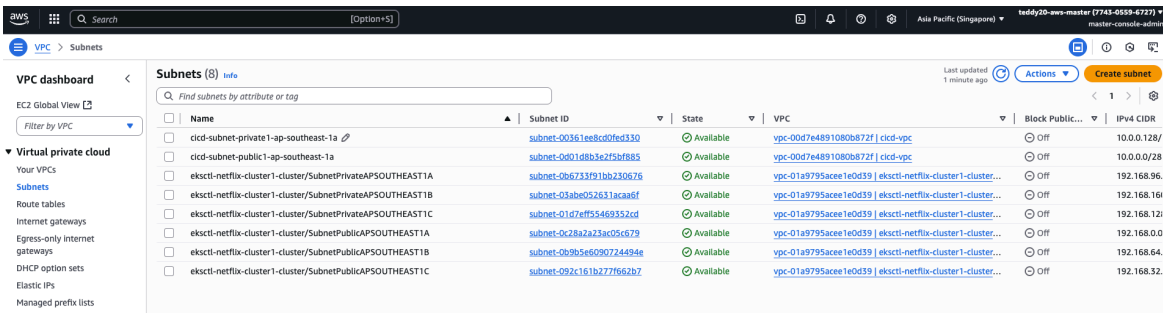
EC2



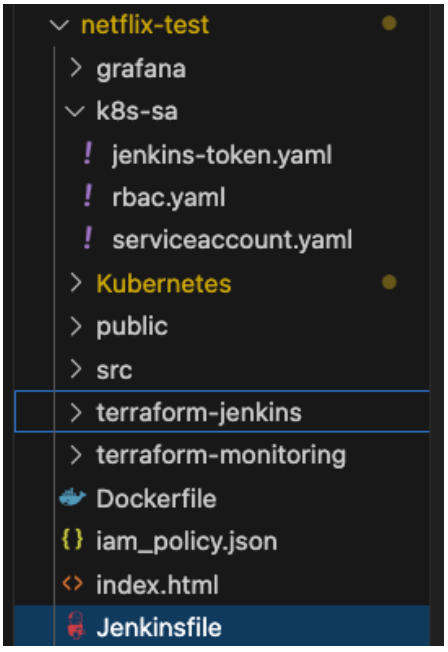
VPC



Subnet Mask



Then Go to check at Kubernetes >> k8s-sa



jenkins-sa.yml

```
apiVersion: v1
kind: ServiceAccount
metadata:
  name: jenkins
  namespace: default
```

Jenkins-Token.yaml

```
apiVersion: v1
kind: Secret
metadata:
  name: jenkins-token
  namespace: default
  annotations:
    kubernetes.io/service-account.name: jenkins
type: kubernetes.io/service-account-token
```

```
teddyyekyawthu@mac .aws % kubectl get secret
NAME           TYPE                                  DATA   AGE
jenkins-token   kubernetes.io/service-account-token   3      37h
```

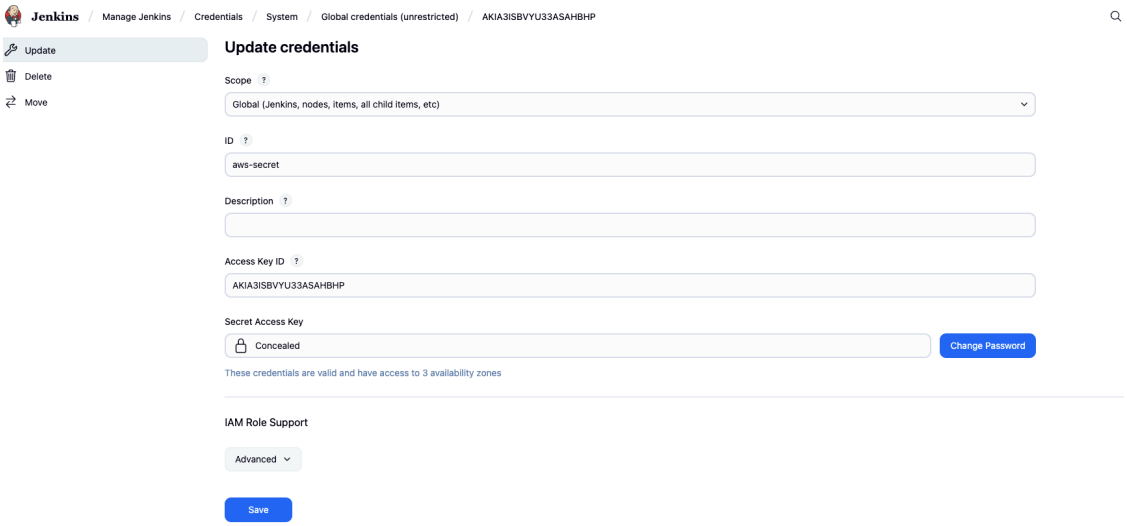
Retrieve token

```
kubectl apply -f jenkins-token.yml
kubectl get secret jenkins-token -n default -o jsonpath='{.data.token}' | base64 --decode

teddyyekyawthu@mac .aws % kubectl get secret jenkins-token -n default -o jsonpath='{.
data.token}' | base64 --decode
eyJhbGciOiJSUzI1NiIsImtpZCI6IjNpZW1hUEYyUkpqUll1MTVTbDhHSVRhSE5VQ2NIU1VFR0
l1UU8zdjVHQ1UifQ.eyJpc3MiOiJrdWJlcm5ldGVzL3NlcnZpY2VhY2NvdW50Iiwia3ViZXJuZ
XRlcy5pby9zZXJ2aWNlYWNjb3VudC9uYW1lc3BhY2UiOiJkZWZhdWx0Iiwia3ViZXJuZXRlc
y5pby9zZXJ2aWNlYWNjb3VudC9zZWNyZXQubmFtZSI6ImplbmtpbnMtdG9rZW4iLCJrdW
Jlcm5ldGVzLmlvL3NlcnZpY2VhY2NvdW50L3NlcnZpY2UtYWNjb3VudC5uYW1lIjoiamVua2l
ucyIsImt1YmVybmV0ZXMuaW8vc2VydmljZWFjY291bnQvc2VydmljZS1hY2NvdW50LnVpZ
CI6ImQwYTQwNTJmLTlmOGQtNDAwMS1iMjBkLTRkNTI4M2JmN2U3ZiIsInN1YiI6InN5c3Rl
bTpzZXJ2aWNlYWNjb3VudDpkZWZhdWx0OmplbmtpbnMifQ.N02ZFtlcdBcdKzW3D7i3kVf
8sTu1TMF8HJqSxo0K7DgkP-96hs2unAfxkFfuXPvneHjSTV3Qsv34mkbbBeLJ7MSKdQred
FCfe-v53yYG3jMN96u_h2nPwf9jvp4pAqUanLng0hxzRofTwU3aJzQ0_gDcPlkscKchazB7
Mi3lMdwVqYIGjRqMUVbBl6JomcoJviZ6ui_3RTiu2tbXmLi36KP6VGl7cJ24x0oBHeArgiB3D
XoyAKJb8wXOb33iL8uklcTEbGdc9RLZnRlVgd9OJrAuYcSSuVBFADkl0U-PY6BmRlY0lf_KH
bXlGwICSod7nlGNxC1X07jTqn3WfFGOYQ
```

1. Store the token in Jenkins (Credentials ID: kubernetes).

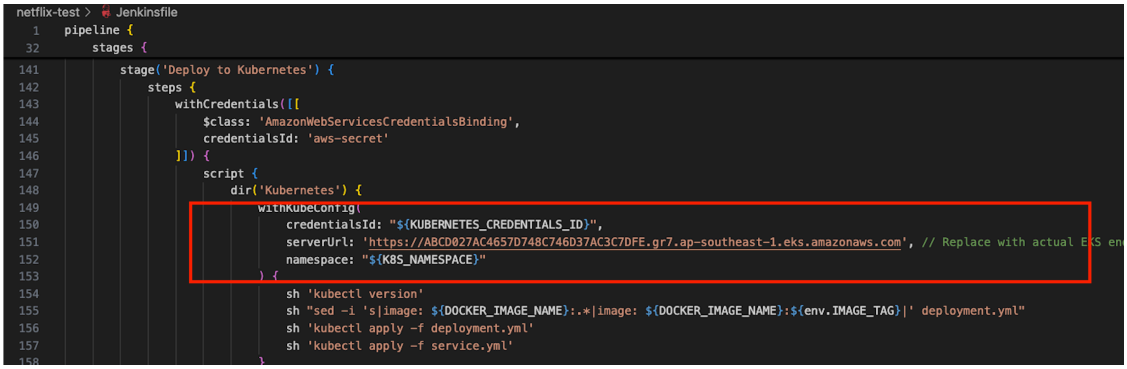
2. Get the EKS API server URL:

```
aws eks describe-cluster --name netflix-cluster --query 'cluster.endpoint' --output tex
t

teddyyekyawthu@mac .aws % aws eks describe-cluster --name netflix-cluster1 --quer
y 'cluster.endpoint' --output text --profile teddy-kube
https://ABCD027AC4657D748C746D37AC3C7DFE.gr7.ap-southeast-1.eks.amazonaws.
com
```



`aws eks describe-cluster --name netflix-cluster1 --query 'cluster.endpoint' --output text --profile teddy-kube https://ABCD027AC4657D748C746D37AC3C7DFE.gr7.ap-southeast-1.eks.amazonaws.com`

edit in jenkins file



RBAC.yaml

```
apiVersion: rbac.authorization.k8s.io/v1
kind: Role
metadata:
  name: jenkins-deployer
  namespace: default
```

```
rules:
- apiGroups: ["", "apps"]
  resources: ["deployments", "services", "pods"]
  verbs: ["get", "list", "create", "update", "delete", "patch"]
- apiGroups: [""]
  resources: ["deployments"]
  verbs: ["watch"]

---
apiVersion: rbac.authorization.k8s.io/v1
kind: RoleBinding
metadata:
  name: jenkins-deployer-binding
  namespace: default
subjects:
- kind: ServiceAccount
  name: jenkins
  namespace: default
roleRef:
  kind: Role
  name: jenkins-deployer
  apiGroup: rbac.authorization.k8s.io
```

Jenkins File Setting up

```
pipeline {
    agent any

    parameters {
        string(name: 'MAJOR_VERSION', defaultValue: '1', description: 'Major version for the
Docker image tag (e.g., 1 for v1.x)')
    }

    tools {
        jdk 'jdk21'
        nodejs 'node20'
    }

    environment {
        SCANNER_HOME = tool 'sonarqube-scanner'
        TRIVY_HOME = '/usr/bin'
        REPO_URL = 'https://github.com/TEDDY201289/Netflix-test.git'
        REPO_BRANCH = 'main'
        DOCKER_IMAGE_NAME = 'teddy2012/netflix-bubudu'
        SONAR_PROJECT_NAME = 'Netflix'
        SONAR_PROJECT_KEY = 'Netflix'
        DOCKER_CREDENTIALS_ID = 'dockerhub'
```

```
        SONAR_CREDENTIALS_ID = 'SonarQube-Token'
        KUBERNETES_CREDENTIALS_ID = 'kubernetes'
        SONAR_SERVER = 'SonarQube-Server'
        DOCKER_TOOL_NAME = 'docker'
        TRIVY_FS_REPORT = 'trivyfs.txt'
        TRIVY_IMAGE_REPORT = 'trivyimage.txt'
        K8S_NAMESPACE = 'default'
        APP_NAME = 'netflix'
    }

    stages {
        stage('Clean Workspace') {
            steps {
                cleanWs()
            }
            post {
                always {
                    echo "Workspace cleaned successfully"
                }
            }
        }
        stage('Checkout from Git') {
            steps {
                git branch: "${REPO_BRANCH}", url: "${REPO_URL}", credentialsId: 'github-cred
entials'
            }
        }
        stage('SonarQube Analysis') {
            steps {
                withSonarQubeEnv(credentialsId: "${SONAR_CREDENTIALS_ID}", installationNa
me: "${SONAR_SERVER}") {
                    sh """
                    ${SCANNER_HOME}/bin/sonar-scanner \
                        -Dsonar.projectName=${SONAR_PROJECT_NAME} \
                        -Dsonar.projectKey=${SONAR_PROJECT_KEY}
                    """
                }
            }
        }
        stage('Quality Gate') {
            steps {
                script {
                    waitForQualityGate abortPipeline: false, credentialsId: "${SONAR_CREDENTIA
LS_ID}"
                }
            }
        }
```

```
        stage('Install Dependencies') {
            steps {
                script {
                    def nodeHome = tool name: 'node20', type: 'nodejs'
                    env.PATH = "${nodeHome}/bin:${env.PATH}"
                    sh "node --version"
                    sh "npm --version"
                    sh "npm install"
                }
            }
            post {
                failure {
                    echo "Failed to install dependencies. Check Node.js setup or package.json."
                }
            }
        }
        // stage('OWASP Dependency Check') {
        //     steps {
        //         withCredentials([string(credentialsId: 'nvd-api-key', variable: 'NVD_API_KE
Y')]) {
        //             dependencyCheck additionalArguments: "--scan ./ --disableYarnAudit --dis
ableNodeAudit --nvdApiKey ${NVD_API_KEY}", odcInstallation: 'DP-Check'
        //             dependencyCheckPublisher pattern: '**/dependency-check-report.xml'
        //         }
        //     }
        // }
        stage('Trivy FS Scan') {
            steps {
                script {
                    sh "${TRIVY_HOME}/trivy fs . > ${TRIVY_FS_REPORT}"
                }
            }
            post {
                always {
                    archiveArtifacts artifacts: "${TRIVY_FS_REPORT}", allowEmptyArchive: true
                }
            }
        }
        stage('Set Version') {
            steps {
                script {
                    def buildNumber = env.BUILD_NUMBER ?: '0'
                    env.IMAGE_TAG = "v${params.MAJOR_VERSION}.${buildNumber}"
                    echo "Docker image will be tagged as: ${DOCKER_IMAGE_NAME}:${env.IMA
GE_TAG}"
                }
            }
```

```
        }
        stage('Docker Build & Push') {
            steps {
                withCredentials([string(credentialsId: 'tmdb-api-key', variable: 'TMDB_API_KE
Y')]) {
                    script {
                        withDockerRegistry(credentialsId: "${DOCKER_CREDENTIALS_ID}", toolNa
me: "${DOCKER_TOOL_NAME}") {
                            sh "docker build -t ${APP_NAME} --build-arg TMDB_V3_API_KEY=${TMD
B_API_KEY} ."
                            sh "docker tag ${APP_NAME} ${DOCKER_IMAGE_NAME}:${env.IMAGE_T
AG}"
                            sh "docker push ${DOCKER_IMAGE_NAME}:${env.IMAGE_TAG}"
                        }
                    }
                }
            }
            post {
                always {
                    sh "docker rmi ${APP_NAME} ${DOCKER_IMAGE_NAME}:${env.IMAGE_TAG} |
| true"
                }
            }
        }
        stage('Trivy Image Scan') {
            steps {
                script {
                    sh "${TRIVY_HOME}/trivy image ${DOCKER_IMAGE_NAME}:${env.IMAGE_TA
G} > ${TRIVY_IMAGE_REPORT}"
                }
            }
            post {
                always {
                    archiveArtifacts artifacts: "${TRIVY_IMAGE_REPORT}", allowEmptyArchive: tru
e
                }
            }
        }
        stage('Deploy to Kubernetes') {
            steps {
                withCredentials([[
                    $class: 'AmazonWebServicesCredentialsBinding',
                    credentialsId: 'aws-secret'
                ]]) {
                    script {
                        dir('Kubernetes') {
                            withKubeConfig(
```

```
                    credentialsId: "${KUBERNETES_CREDENTIALS_ID}",
                    serverUrl: 'https://ABCD027AC4657D748C746D37AC3C7DFE.gr7.ap-s
outheast-1.eks.amazonaws.com', // Replace with actual EKS endpoint
                    namespace: "${K8S_NAMESPACE}"
                ) {
                    sh 'kubectl version'
                    sh "sed -i 's|image: ${DOCKER_IMAGE_NAME}:.*|image: ${DOCKER_I
MAGE_NAME}:${env.IMAGE_TAG}|' deployment.yml"
                    sh 'kubectl apply -f deployment.yml'
                    sh 'kubectl apply -f service.yml'
                }
            }
        }
    }
  }
  post {
    always {
      emailext attachLog: true,
        subject: "'${currentBuild.result}'",
        body: "Project: ${env.JOB_NAME}<br/>" +
            "Build Number: ${env.BUILD_NUMBER}<br/>" +
            "URL: ${env.BUILD_URL}<br/>",
        to: 'hlaingminpaing.ygn@gmail.com', // Update with your email
        attachmentsPattern: 'trivyfs.txt,trivyimage.txt'
    }
  }
}
```

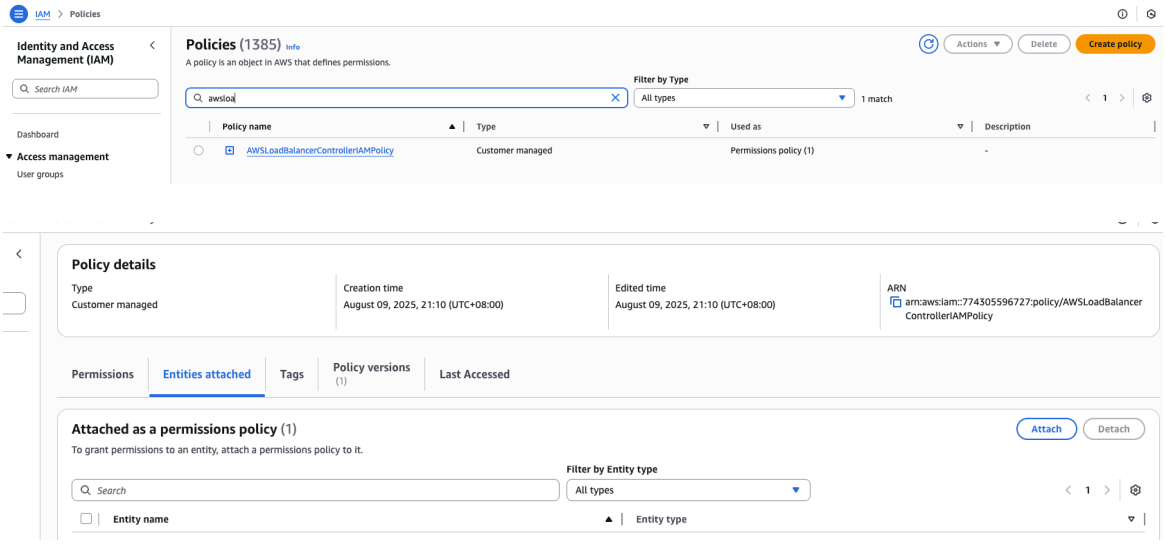
ALB installation on EKS

```
# Download an IAM policy for the AWS Load Balancer Controller that allows it to make call
s to AWS APIs on your behalf.
curl -O https://raw.githubusercontent.com/kubernetes-sigs/aws-load-balancer-controller/
v2.13.0/docs/install/iam_policy.json
# Create an IAM policy using the policy downloaded in the previous step.
```

`export AWS_PROFILE=profilename` (Export profile name)

`export AWS_PROFILE=teddy-kube`

```
# Create an IAM policy using the policy downloaded in the previous step.
aws iam create-policy \
    --policy-name AWSLoadBalancerControllerIAMPolicy \
    --policy-document file://iam_policy.json \
    --profile teddy-kube
```

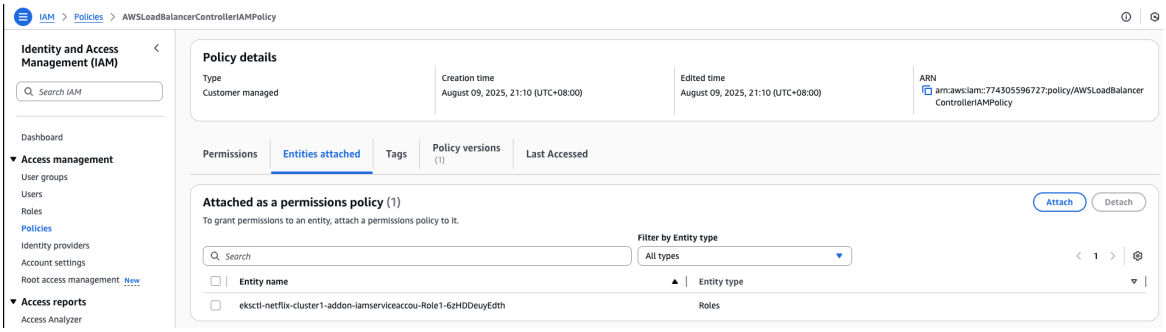


No entities attached , so OIDC is required to run.

```
# Create OIDC provider (eksctl)
cluster_name=<my-cluster>
oidc_id=$(aws eks describe-cluster --name $cluster_name --query "cluster.identity.oidc.issuer" --output text | cut -d '/' -f 5)
echo $oidc_id
```

check iam policy

```
eksctl utils associate-iam-oidc-provider --cluster netflix-cluster1 --approve
eksctl create iamserviceaccount \
    --cluster=netflix-cluster1 \
    --namespace=kube-system \
    --name=aws-load-balancer-controller \
    --attach-policy-arn=arn:aws:iam::774305596727:policy/AWSLoadBalancerControllerIAMPolicy \
    --override-existing-serviceaccounts \
    --region ap-southeast-1 \
    --approve
    --profile teddy-kube
```



Install AWS Load Balancer Controller (ALB)

Add the eks-charts Helm chart repository. AWS maintains this repository on GitHub.

```
helm repo add eks https://aws.github.io/eks-charts
helm repo update eks
helm install aws-load-balancer-controller eks/aws-load-balancer-controller \
  -n kube-system \
  --set clusterName=my-cluster \
  --set serviceAccount.create=false \
  --set serviceAccount.name=aws-load-balancer-controller \
  --version 1.13.0
kubectl get deployment -n kube-system aws-load-balancer-controller

teddyyekyawthu@mac .aws % kubectl get deployment -n kube-system aws-load-balance
r-controller
NAME                           READY   UP-TO-DATE   AVAILABLE   AGE
aws-load-balancer-controller   2/2     2            2           37h
```

If not working with eksctl Create OIDC provider (AWS Console)

- Open the Amazon EKS console.
- In the left pane, select Clusters, and then select the name of your cluster on the Clusters page.
- In the Details section on the Overview tab, note the value of the OpenID Connect provider URL.
- Open the IAM console at https://console.aws.amazon.com/iam/.
- In the left navigation pane, choose Identity Providers under Access management. If a Provider is listed that matches the URL for your cluster, then you already have a provider for your cluster. If a provider isn't listed that matches the URL for your cluster, then you must create one.
- To create a provider, choose Add provider.
- For Provider type, select OpenID Connect.

- For Provider URL, enter the OIDC provider URL for your cluster.
- For Audience, enter sts.amazonaws.com.
- (Optional) Add any tags, for example a tag to identify which cluster is for this provider.
- Choose Add provider.

ingress.yaml

```
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  namespace: default
  name: ingress
  annotations:
    alb.ingress.kubernetes.io/scheme: internet-facing
    alb.ingress.kubernetes.io/target-type: ip
spec:
  ingressClassName: alb
  rules:
  - host: netflix.bubududu.life
    http:
      paths:
      - path: /
        pathType: Prefix
        backend:
          service:
            name: netflix-app
            port:
              number: 80
  # apiVersion: networking.k8s.io/v1
  # kind: Ingress
  # metadata:
  #   namespace: default
  #   name: ingress
  #   annotations:
  #     alb.ingress.kubernetes.io/scheme: internet-facing
  #     alb.ingress.kubernetes.io/target-type: ip
  #     # alb.ingress.kubernetes.io/listen-ports: '[{"HTTP": 80}]'
  #     alb.ingress.kubernetes.io/listen-ports: '[{"HTTP": 80}, {"HTTPS": 443}]'
  #     alb.ingress.kubernetes.io/certificate-arn: arn:aws:acm:ap-southeast-1:537467926164:certificate/aa669601-04ad-4e78-96a2-077ac68623b6
  #     alb.ingress.kubernetes.io/ssl-redirect: '443'
  #     kubernetes.io/ingress.class: alb
  # spec:
  #   # ingressClassName: alb
  #   rules:
  #     - host: netflix.myanmartechsolutions.site
  #       http:
```

```
  #       paths:
  #         - path: /
  #           pathType: Prefix
  #           backend:
  #             service:
  #               name: netflix-app
  #               port:
  #                 number: 80
  # - host: youtube.myanmartechsolutions.site
  #   http:
  #     paths:
  #       - path: /
  #         pathType: Prefix
  #         backend:
  #           service:
  #             name: youtube-clone
  #             port:
  #               number: 80
```

```
teddyyekyawthu@mac Kubernetes % kubectl get ingress
NAME      CLASS   HOSTS                ADDRESS                                                  P
ORTS   AGE
ingress   alb     netflix.bubududu.life   k8s-default-ingress-d940d6d82e-1249514683.ap-s
outheast-1.elb.amazonaws.com   80      37h
```

```
#running svc type would be Loadbalancer , so needs to change back ClusterIP else ALB
will not work.

teddyyekyawthu@mac Kubernetes % kubectl edit svc netflix-app

# Please edit the object below. Lines beginning with a '#' will be ignored,
# and an empty file will abort the edit. If an error occurs while saving this file will be
# reopened with the relevant failures.
#
apiVersion: v1
kind: Service
metadata:
  annotations:
    kubectl.kubernetes.io/last-applied-configuration: |
  creationTimestamp: "2025-08-09T13:03:27Z"
  labels:
    app: netflix-app
  name: netflix-app
  namespace: default
  resourceVersion: "10055"
  uid: a3a39e64-34d1-4dbb-95c0-5f37bf84ae64
```

```
spec:
  clusterIP: 10.100.220.54
  clusterIPs:
  - 10.100.220.54
  internalTrafficPolicy: Cluster
  ipFamilies:
  - IPv4
  ipFamilyPolicy: SingleStack
  ports:
  - port: 80
    protocol: TCP
    targetPort: 80
  selector:
    app: netflix-app
  sessionAffinity: None
  type: ClusterIP #change the IP type from LoadBalancer to ClusterIP
status:
  loadBalancer: {}
```

running svc type would be Loadbalancer , so needs to change back ClusterIP else ALB will not work.

```
teddyyekyawthu@mac .aws % kubectl get svc
NAME         TYPE       CLUSTER-IP     EXTERNAL-IP   PORT(S)   AGE
kubernetes   ClusterIP   10.100.0.1     <none>        443/TCP   38h
netflix-app   ClusterIP   10.100.220.54   <none>        80/TCP    38h
```

```
k8s-default-ingress-d940d6d82e-1249514683.ap-southeast-1.elb.amazonaws.com.
52.220.67.87
18.139.120.226
13.214.251.191
```

back to Push (CICD)

Go to path what we want to push via Git

```
teddyyekyawthu@mac netflix-test % pwd
/Users/teddyyekyawthu/Teddy-files/netflix-test
```

`ssh -T git@github.com` (#authentication)

`rm -rf .git` **(optional)**

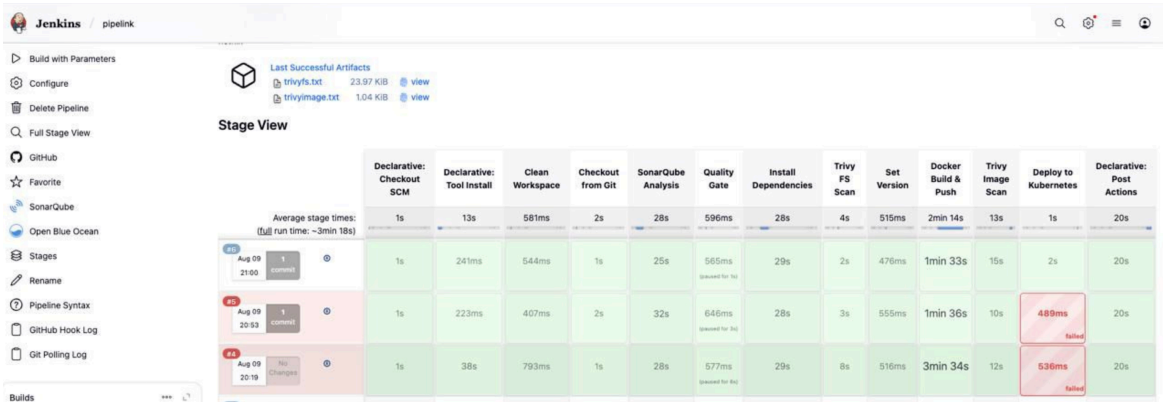
`git init`

`git add .`

`git commit -m "added output.tf "`

`git branch -M main`

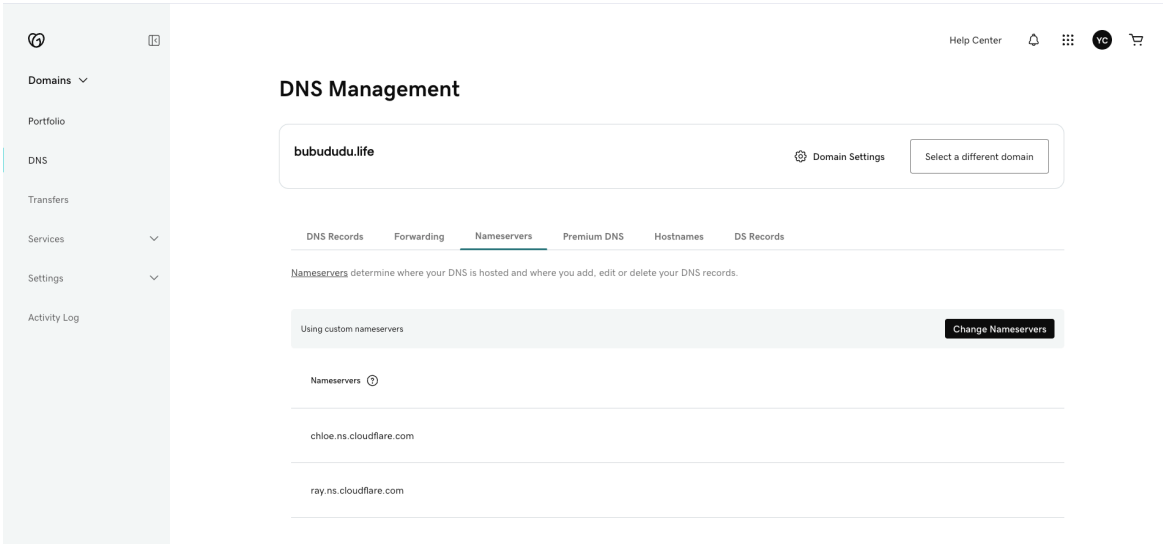
`git push -u origin main`



Go to Godaddy

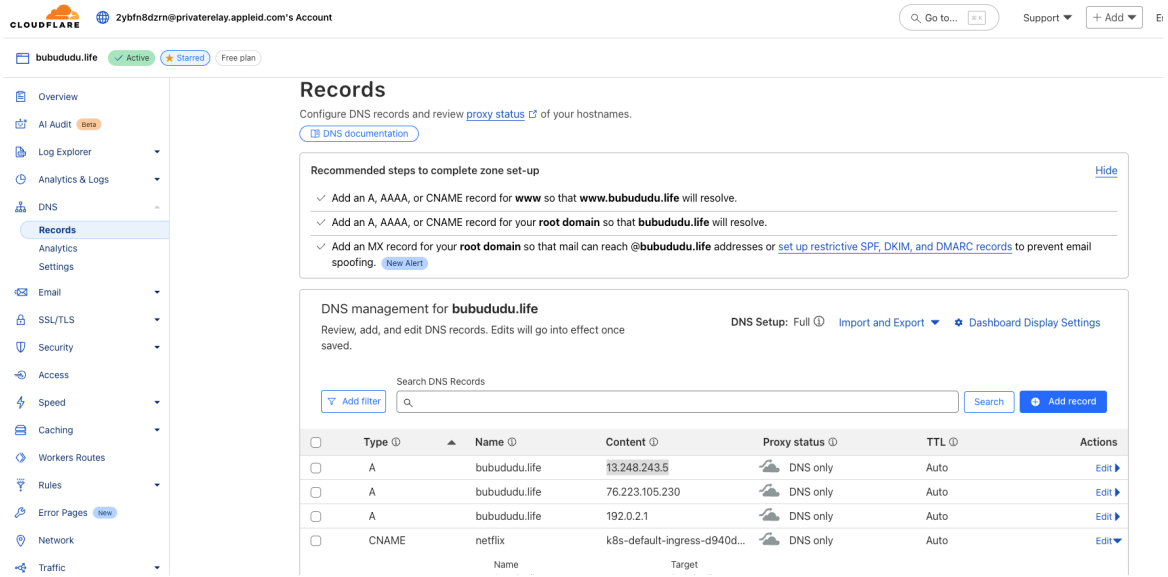
https://dcc.godaddy.com/control/dnsmanagement?domainName=bubududu.life&subtab=nameservers

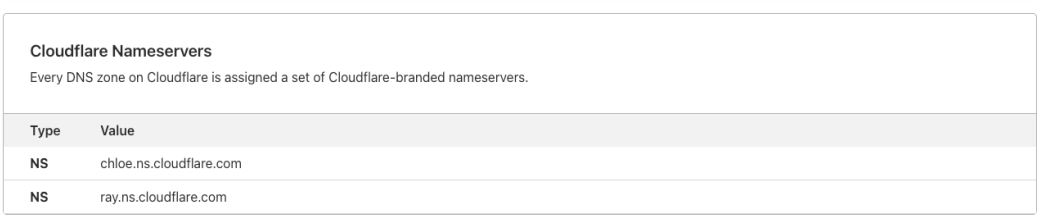
add Nameserver based on Cloudflare DNS information:

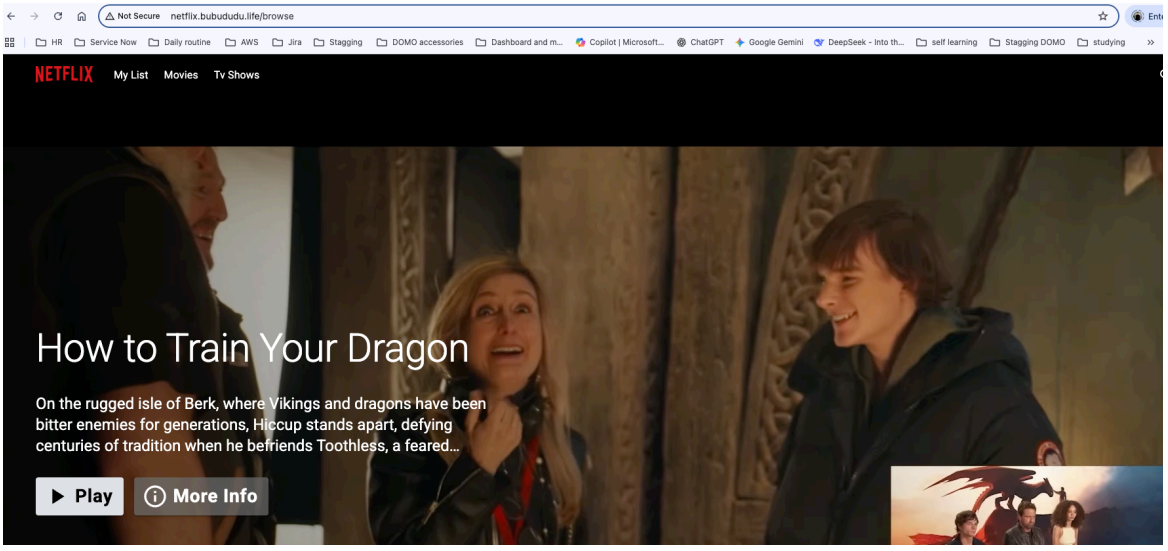


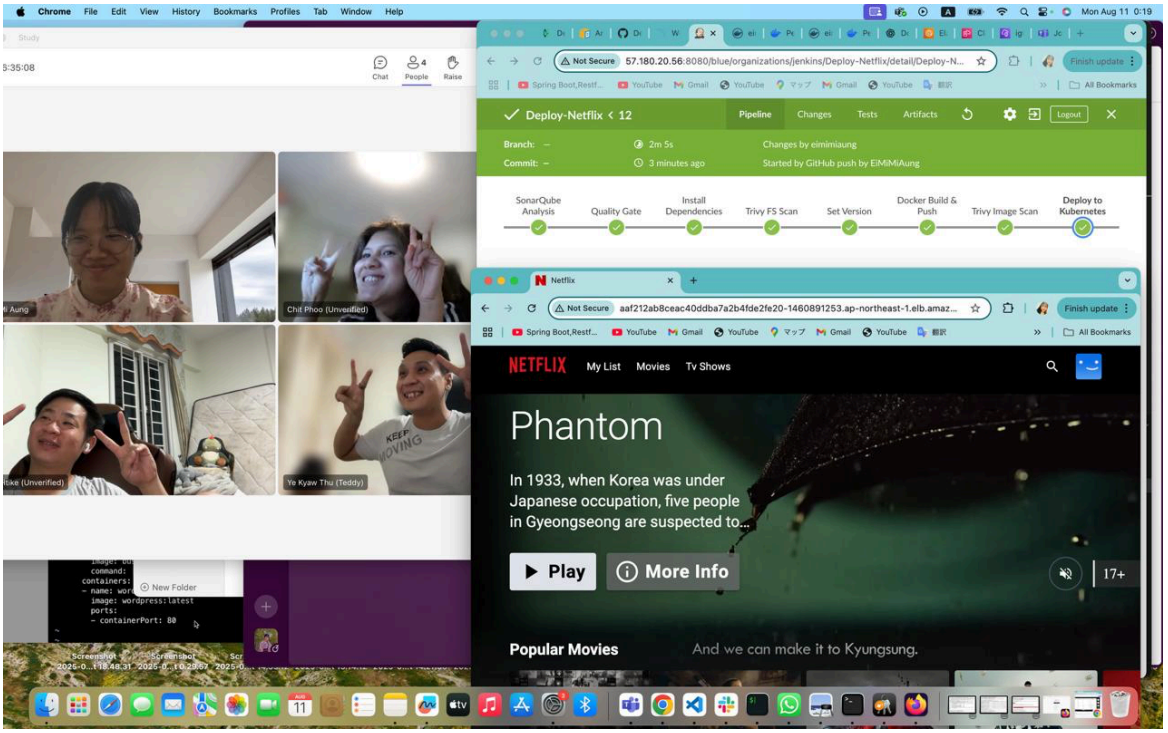
Cloudflare

https://dash.cloudflare.com/2d979a5d2c1c7389c0f62a7968ec1140/bubududu.life/dns/records


2ybfn8dzrn@privaterelay.appleid.com's Account
Go to...
Support
Add
bubududu.life
Active
Starred
Free plan
Overview
AI Audit
Beta
Log Explorer
Analytics & Logs
DNS
Records
Analytics
Settings
Email
SSL/TLS
Security
Access
Speed
Caching
Workers Routes
Rules
Error Pages
new
Network
Traffic
Records
Configure DNS records and review proxy status of your hostnames.
DNS documentation
Recommended steps to complete zone set-up
Hide
Add an A, AAAA, or CNAME record for www so that www.bubududu.life will resolve.
Add an A, AAAA, or CNAME record for your root domain so that bubududu.life will resolve.
Add an MX record for your root domain so that mail can reach @bubududu.life addresses or set up restrictive SPF, DKIM, and DMARC records to prevent email spoofing.
New Alert
DNS management for bubududu.life
Review, add, and edit DNS records. Edits will go into effect once saved.
DNS Setup: Full
Import and Export
Dashboard Display Settings
Search DNS Records
Add filter
Search
Add record
Type
Name
Content
Proxy status
TTL
Actions
A bubududu.life 13.248.243.5 DNS only Auto Edit
A bubududu.life 76.223.105.230 DNS only Auto Edit
A bubududu.life 192.0.2.1 DNS only Auto Edit
CNAME netflix k8s-default-ingress-d940d... DNS only Auto Edit
Name
Target


Cloudflare Nameservers
Every DNS zone on Cloudflare is assigned a set of Cloudflare-branded nameservers.
Type
Value
NS
chloe.ns.cloudflare.com
NS
ray.ns.cloudflare.com


Not Secure
netflix.bubududu.life/browse
NETFLIX
My List
Movies
Tv Shows
How to Train Your Dragon
On the rugged isle of Berk, where Vikings and dragons have been bitter enemies for generations, Hiccup stands apart, defying centuries of tradition when he befriends Toothless, a feared...
Play
More Info


Deploy-Netflix < 12
Pipeline
Changes
Tests
Artifacts
SonarQube Analysis
Quality Gate
Install Dependencies
Trivy FS Scan
Set Version
Docker Build & Push
Trivy Image Scan
Deploy to Kubernetes
NETFLIX
My List
Movies
Tv Shows
Phantom
In 1933, when Korea was under Japanese occupation, five people in Gyeongseong are suspected to...
Play
More Info
17+
Popular Movies
And we can make it to Kyungsung.