

## Project: CI/CD Pipeline for Nginx

### Web Application using Jenkins, Docker, and Kubernetes

#### Overview

This project implements a complete CI/CD pipeline for a simple Nginx-based web application using:

- **Jenkins:** For continuous integration and automation
- **Docker:** For containerizing the application
- **Docker Hub:** To host the Docker images
- **Kubernetes (MicroK8s):** To deploy and manage the application

#### 1. Prerequisites

- Ubuntu server (cloud or local VM)
- Jenkins installed and configured
- Docker installed and configured
- Docker Hub account
- MicroK8s (or any Kubernetes) installed and running

#### 2. Project Repository

**GitHub Repository:** <https://github.com/suanx/nginx-cicd-project>

#### **Structure:**

- index.html: Static HTML file for the Nginx app
- Dockerfile: For building the Docker image
- Jenkinsfile: CI/CD pipeline script
- k8s-deployment.yaml: Kubernetes deployment & service

#### 3. Jenkins Pipeline (Jenkinsfile)

#### 4. Dockerfile

#### 5. Kubernetes Deployment (k8s-deployment.yaml)

 **NOTE: ALL FILES(3,4,5) UPLOADED TO MY REPO (REPO LINK PROVIDED AT 2)**

## 6. Accessing the Application

Get your server's public IP using: `ip a`

Visit: `http://<your-server-ip>:30080` in your browser.

## 7. Jenkins Credentials Setup

- Navigate to **Manage Jenkins > Credentials > Global**
- Add Docker Hub credentials as Username/Password
- Save it with ID: **dock-con**

## 8. Notes

- Ensure Jenkins has Docker permissions:

```
sudo usermod -aG docker jenkins
```

```
newgrp docker
```

### If using MicroK8s:

```
sudo usermod -aG microk8s jenkins
```

```
sudo chown -R jenkins ~/.kube
```

```
newgrp microk8s
```

## 9. Optional Improvements

- Add notifications (Slack, Email)
- Setup Ingress & HTTPS
- GitHub Webhook for auto-build
- Use Helm charts for better K8s management

Author: Suanx

Project Type: CI/CD Full Stack

Tech Stack: Jenkins, Docker, Kubernetes, GitHub