Jenkins Docker Deployment to EC2 – Complete Guide

Overview

This document explains a complete Jenkins CI/CD pipeline that builds a Docker image, pushes it to DockerHub, deploys it to an EC2 instance using SSH, and handles cleanup and notifications.

Updated Jenkinsfile

```
pipeline {
    agent any

    environment {
        DOCKER_IMAGE = "shashivar04/python-app:latest"
        TARGET_EC2_USER = "ubuntu"
        TARGET_EC2_HOST = "172.31.3.12"
    }

    stages {

        stage('Checkout Code') {
            steps {
                git branch: 'main',
                    url: 'https://github.com/shashi04/jenkins-dockerImage'
            }
        }

        stage('Build Docker Image') {
            steps {
                sh 'docker build -t $DOCKER_IMAGE .'
            }
        }

        stage('Login to DockerHub') {
            steps {
                withCredentials([
                    usernamePassword(
                        credentialsId: 'dockerhub-credentials',
                        usernameVariable: 'DOCKER_USER',
                        passwordVariable: 'DOCKER_PASS'
                    )
                ]) {
                    sh 'echo "$DOCKER_PASS" | docker login -u "$DOCKER_USER" --password-stdin'
                }
            }
        }

        stage('Push Docker Image') {
            steps {
                sh 'docker push $DOCKER_IMAGE'
            }
        }

        stage('Deploy to EC2') {
            steps {
                sshagent(credentials: ['ec2-ssh-credentials']) {
                    sh '''
                    ssh -o StrictHostKeyChecking=no $TARGET_EC2_USER@$TARGET_EC2_HOST << EOF
                      docker pull shashivar04/python-app:latest
                      docker stop my_container || true
                      docker rm my_container || true
                      docker run -d --restart unless-stopped --name my_container -p 80:5000 shashivar
                    EOF
                    '''
                }
            }
```

```
            }

            stage('Cleanup Local Images') {
                steps {
                    sh 'docker rmi $DOCKER_IMAGE || true'
                }
            }
        }
    }
```

Step-by-Step Setup

1. Install Required Jenkins Plugins:
   - Docker Pipeline
   - SSH Agent
   - Git
   - Email Extension

2. Add DockerHub Credentials in Jenkins:
   - Type: Username with password
   - Credential ID: dockerhub-credentials

3. Add EC2 SSH Credentials:
   - Type: SSH Username with private key
   - Credential ID: ec2-ssh-credentials
   - Username: ubuntu
   - Use private key (id_rsa)

4. Add Jenkins User to Docker Group (on Jenkins server):
   sudo usermod -aG docker jenkins
   sudo systemctl restart jenkins

5. Install Docker on EC2:
   sudo apt update
   sudo apt install docker.io -y
   sudo usermod -aG docker ubuntu

6. Open EC2 Security Group Ports:
   - 22 (SSH)
   - 80 (Application)

7. Create Jenkins Pipeline Job:
   - Pipeline from SCM
   - Git repository
   - Script path: Jenkinsfile