

FINAL PROJECT

JAVA-APPLICATION DEPLOYMENT IN MINIKUBE

```
dharani@DharaniDharanPC: ~$ sudo apt update
Get:1 https://apt.releases.hashicorp.com noble InRelease [12.9 kB]
Ign:2 https://pkg.jenkins.io/debian-stable binary/ InRelease
Hit:3 https://pkg.jenkins.io/debian-stable binary/ Release
Get:4 https://apt.releases.hashicorp.com noble/main amd64 Packages [174 kB]
Hit:6 http://archive.ubuntu.com/ubuntu noble InRelease
Get:7 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:8 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:10 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [943 kB]
Get:11 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [673 kB]
Get:12 http://archive.ubuntu.com/ubuntu noble-updates/main Translation-en [211 kB]
Get:13 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [153 kB]
Get:14 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [13.5 kB]
Get:15 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1044 kB]
Get:16 http://archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [263 kB]
Get:17 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [364 kB]
Get:18 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [25.9 kB]
Get:19 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [812 kB]
Get:20 http://archive.ubuntu.com/ubuntu noble-updates/restricted Translation-en [164 kB]
Get:21 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:22 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 c-n-f Metadata [492 B]
Get:23 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [25.3 kB]
Get:24 http://archive.ubuntu.com/ubuntu noble-updates/multiverse Translation-en [5464 B]
Get:25 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
Get:26 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 c-n-f Metadata [592 B]
Get:27 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Packages [39.1 kB]
Get:28 http://archive.ubuntu.com/ubuntu noble-backports/main Translation-en [8676 B]
Get:29 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [7080 B]
Get:30 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 c-n-f Metadata [272 B]
Get:31 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [26.4 kB]
Get:32 http://archive.ubuntu.com/ubuntu noble-backports/universe Translation-en [16.3 kB]
Get:33 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [21.2 kB]
Get:34 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 c-n-f Metadata [1304 B]
Get:35 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [131 kB]
Get:36 http://archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [216 B]
Get:37 http://archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 B]
Get:38 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [8960 B]
Get:39 http://security.ubuntu.com/ubuntu noble-security/main amd64 c-n-f Metadata [7032 B]
Get:40 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [822 kB]
Get:41 http://security.ubuntu.com/ubuntu noble-security/universe Translation-en [178 kB]
Get:42 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [51.9 kB]
Get:43 http://security.ubuntu.com/ubuntu noble-security/universe amd64 c-n-f Metadata [17.0 kB]
Get:44 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [730 kB]
Get:45 http://security.ubuntu.com/ubuntu noble-security/restricted Translation-en [146 kB]
Get:46 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [208 B]
Get:47 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 c-n-f Metadata [468 B]
```

```
dharani@DharaniDharanPC: ~$ sudo apt install openssl-server -y
Get:49 http://security.ubuntu.com/ubuntu noble-security/multiverse Translation-en [4460 B]
Get:50 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [208 B]
Get:51 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 c-n-f Metadata [380 B]
Fetched 7502 kB in 6s (1358 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
58 packages can be upgraded. Run 'apt list --upgradable' to see them.
dharani@DharaniDharanPC: ~$ sudo apt install openssl-server -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libwrap0 ncurses-term openssl-client openssl-sftp-server ssh-import-id
Suggested packages:
  keychain libpam-ssh monkeysphere ssh-askpass molly-guard
The following NEW packages will be installed:
  libwrap0 ncurses-term openssl-server openssl-sftp-server ssh-import-id
The following packages will be upgraded:
  openssl-client
1 upgraded, 5 newly installed, 0 to remove and 57 not upgraded.
Need to get 880 kB/1785 kB of archives.
After this operation, 6861 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 openssl-sftp-server amd64 1:9.6p1-3ubuntu13.8 [37.3 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble/main amd64 libwrap0 amd64 7.6.q-33 [47.9 kB]
Get:3 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 openssl-server amd64 1:9.6p1-3ubuntu13.8 [509 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble/main amd64 ncurses-term all 6.4+20240113-1ubuntu2 [275 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 ssh-import-id all 5.11-0ubuntu2.24.04.1 [10.1 kB]
Fetched 880 kB in 2s (368 kB/s)
Preconfiguring packages ...
(Reading database ... 44206 files and directories currently installed.)
Preparing to unpack .../0-openssl-client_1:3a9.6p1-3ubuntu13.8_amd64.deb ...
Unpacking openssl-client (1:9.6p1-3ubuntu13.8) over (1:9.6p1-3ubuntu13.5) ...
Selecting previously unselected package openssl-sftp-server.
Preparing to unpack .../1-openssl-sftp-server_1:3a9.6p1-3ubuntu13.8_amd64.deb ...
Unpacking openssl-sftp-server (1:9.6p1-3ubuntu13.8) ...
Selecting previously unselected package libwrap0:amd64.
Preparing to unpack .../2-libwrap0_7.6.q-33_amd64.deb ...
Unpacking libwrap0:amd64 (7.6.q-33) ...
Selecting previously unselected package openssl-server.
Preparing to unpack .../3-openssl-server_1:3a9.6p1-3ubuntu13.8_amd64.deb ...
Unpacking openssl-server (1:9.6p1-3ubuntu13.8) ...
Selecting previously unselected package ncurses-term.
Preparing to unpack .../4-ncurses-term_6.4+20240113-1ubuntu2_all.deb ...
Unpacking ncurses-term (6.4+20240113-1ubuntu2) ...
Selecting previously unselected package ssh-import-id.
Preparing to unpack .../5-ssh-import-id_5.11-0ubuntu2.24.04.1_all.deb ...
```



```
dhara...@Dhara...PC: ~$ minikube delete --all --purge
Deleting "minikube" in docker ...
Removing /home/dhara.../.minikube/machines/minikube ...
Removed all traces of the "minikube" cluster.
Successfully deleted all profiles
Successfully purged minikube directory located at - [/home/dhara.../.minikube]
Kicbase images have not been deleted. To delete images run:
  docker rmi gcr.io/k8s-minikube/kicbase:v0.0.46
dhara...@Dhara...PC: ~$ rm -rf ~/.minikube ~/.kube
dhara...@Dhara...PC: ~$ minikube start
minikube v1.35.0 on Ubuntu 24.04 (amd64)
Automatically selected the docker driver. Other choices: none, ssh
Using Docker driver with root privileges
Starting "minikube" primary control-plane node in "minikube" cluster
Pulling base image v0.0.46 ...
Downloading Kubernetes v1.32.0 preload ...
> preloaded-images-k8s-v18-v1...: 333.57 MiB / 333.57 MiB 100.00% 1.75 Mi
Creating docker container (CPUs=2, Memory=2200MB) ...
Failing to connect to https://registry.k8s.io/ from inside the minikube container
To pull new external images, you may need to configure a proxy: https://minikube.sigs.k8s.io/docs/reference/networking/proxy/
Preparing Kubernetes v1.32.0 on Docker 27.4.1 ...
  Generating certificates and keys ...
  Booting up control plane ...
  Configuring RBAC rules ...
Configuring bridge CNI (Container Networking Interface) ...
Verifying Kubernetes components...
  Using image gcr.io/k8s-minikube/storage-provisioner:v5
Enabled addons: default-storageclass, storage-provisioner
Done! kubectcl is now configured to use "minikube" cluster and "default" namespace by default
dhara...@Dhara...PC: ~$ kubectcl get node
NAME          STATUS    ROLES    AGE   VERSION
minikube      Ready     control-plane   30s   v1.32.0
dhara...@Dhara...PC: ~$
```

CREATION OF A PIPELINE PROJECT NAMED “java-application”

Dashboard >

+ New Item

Build History

Project Relationship

Check File Fingerprint

Manage Jenkins

My Views

Build Queue

No builds in the queue.

Build Executor Status

0/2

Cloud Statistics

Add description

All +

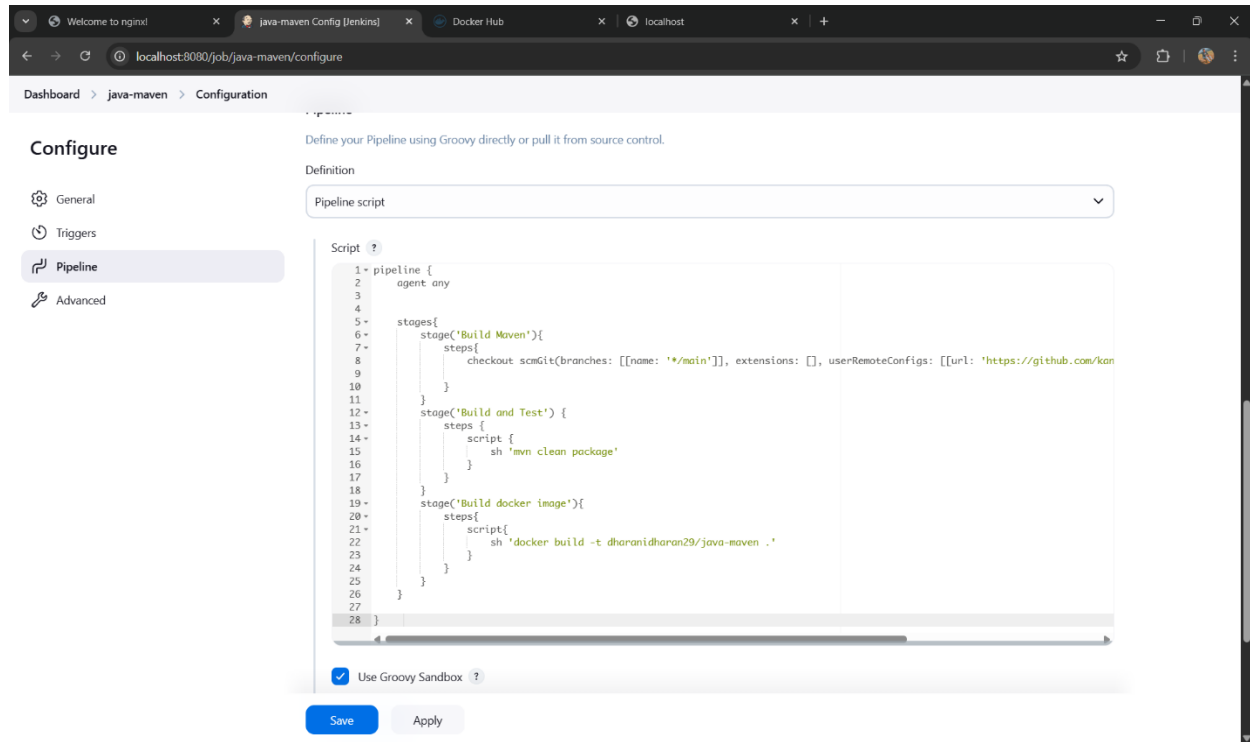
S	W	Name	Last Success	Last Failure	Last Duration
✓	☁	java-application	13 min #8	15 min #7	19 sec ▶
✓	☀	maven	2 days 0 hr #1	N/A	20 sec ▶
✓	☁	simpletomcatapplication	1 day 23 hr #7	1 day 23 hr #6	29 sec ▶

Icon: S M L

REST API

Jenkins 2.492.2

PIPELINE SCRIPT



PIPELINE SCRIPT CODE

```
pipeline {  
  agent any  
  
  stages {  
    stage('scm') {  
      steps {  
        git branch: 'main', url: 'https://github.com/ dharanidharan-palanisamy /simple-web-app.git'  
      }  
    }  
  
    stage('build'){  
      steps {  
        sh "mvn clean"  
        sh "mvn install"  
      }  
    }  
  }  
}
```

```

stage('build to images') { steps
    {
        script{
            sh 'docker build -t dharanidharan-palanisamy /simplewebapp .'
        }
    }
}

stage('push to hub') {
    steps {
        script{
            withDockerRegistry(credentialsId: 'Docker_cred', url: 'https://index.docker.io/v1/') { sh
                'docker push dharanidharan-palanisamy /simplewebapp'
            }
        }
    }
}

stage('Deploy Web App') {
    steps {
        withKubeConfig(caCertificate: '', clusterName: 'minikube', contextName: 'minikube',
credentialsId: 'config_id', namespace: '', restrictKubeConfigAccess: false, serverUrl:
'https://192.168.39.226:8443') {
            sh 'kubectl apply -f deployment.yml --validate=false'
        }
    }
}
}
}
}

```

DEPLOYMENT FILE

deployment.yml

apiVersion: apps/v1 kind:

Deployment metadata:

name: webnginx2

labels:

name: webnginx2

spec:

replicas: 1

selector:

matchLabels:

apptype: web-backend

strategy:

type: RollingUpdate

template:

metadata:

labels:

apptype: web-backend

spec:

containers:

- name: webnginx2

image: dharanidharan-palanisamy

/simplewebapp:latest ports:

- containerPort: 7070

apiVersion: v1

kind: Service

metadata:

name: my-service

labels:

app: my-service

type: backend-app

spec:

type: NodePort

ports:

- targetPort: 8080

port: 7070


nodePort: 30002


selector:


apptype: web-backend

CREATION OF CREDENTIALS

Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted) > config

 Update

 Delete




 Move

config

Usage

This credential has been recorded as used in the following places:

Note: usage tracking requires the cooperation of plugins and consequently may not track every use.

[java-application](#)   #7  #8

localhost:30000?tab=credentials

REST API Jenkins 2.492.2

CONNECTING TO KUBERNETES

Dashboard > Manage Jenkins > Clouds > Kubernetes > Configure

Kubernetes Namespace

Agent Docker Registry ?

☐ Inject restricted PSS security context in agent container definition ?

Credentials

config

+ Add

Connected to Kubernetes v1.32.0

Test Connection

☐ WebSocket ?
☐ Direct Connection ?

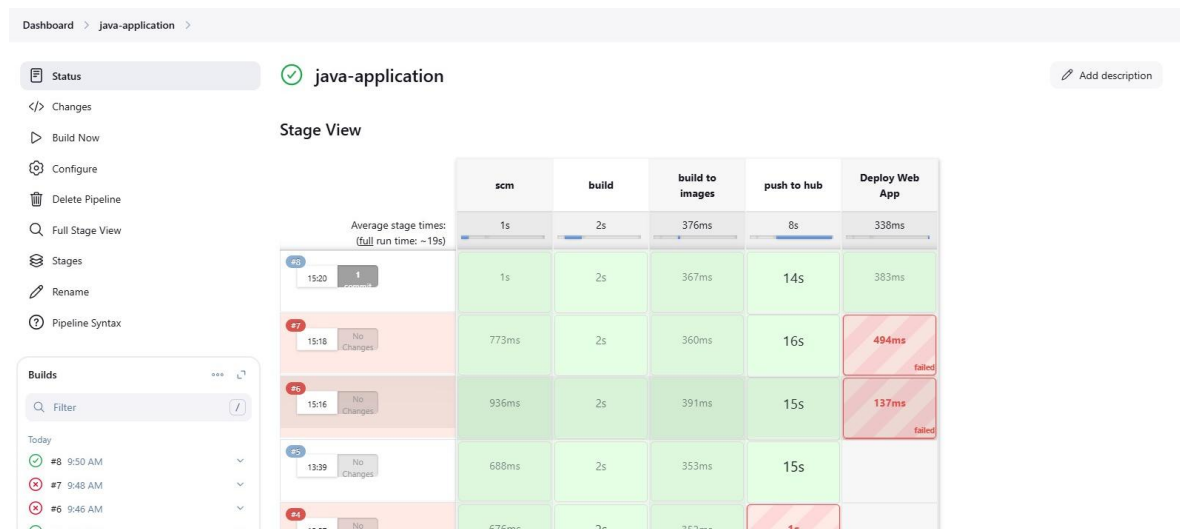
⚠️ 'TCP port for inbound agents' is disabled in Global Security settings. Connecting Kubernetes agents will not work without this or WebSocket mode!

Jenkins URL ?

Save

Apply

STAGE VIEW OF BUILD





BUILD SUCCESS

Dashboard > java-application > #8

Status

</> Changes

Console Output

Edit Build Information

Delete build '#8'

Timings

Git Build Data

Pipeline Overview

Pipeline Console

Restart from Stage

Replay

Pipeline Steps

Workspaces

Previous Build

✓ #8 (Mar 21, 2025, 9:50:44 AM)

Add description

Keep this build forever

Started by user Akshitha

Started 19 min ago
Took 19 sec

This run spent:

- 6 ms waiting;
- 19 sec build duration;
- 19 sec total from scheduled to completion.

Revision: 837fed54fe87aba876eb01a154c59657398cd159

Repository: <https://github.com/Akshi1910/simple-web-app.git>

- refs/remotes/origin/main

Changes

- deployment.yml (details / githubweb)

DEPLOYMENT FROM MINIKUBE(TERMINAL)

Commands:

minikube start

sudo nano deployment.yml kubectl

apply -f deployment.yml kubectl get

pod

minikube service my-service

kubectl port-forward svc/my-service 7070:7070

On browser run <https://127.0.0.1:7070/maven-web-app>

Hello World!
