

Edureka Industrial Grade Project

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Version 1

Document History		
Date	Description	Author
02/12/2025	Created	Rakesh Ranade

Introduction:

This document contains information regarding the project work completed for Edureka DevOps certification. Goal of this project is to develop a deployment pipeline using git as a source repository, jenkins as a CI/CD pipeline and docker as its image creation tool. At the end the same image is deployed at microk8s on the same machine

Flow of Pipeline

- Pull Source from Repository
- pull a docker image from microsofts images
- copy source to image
- restore packages and build code in the image
- start a container using that image
- use curl command to perform a healthcheck on the website
- publish the image to docker hub
- deploy image to microk8s

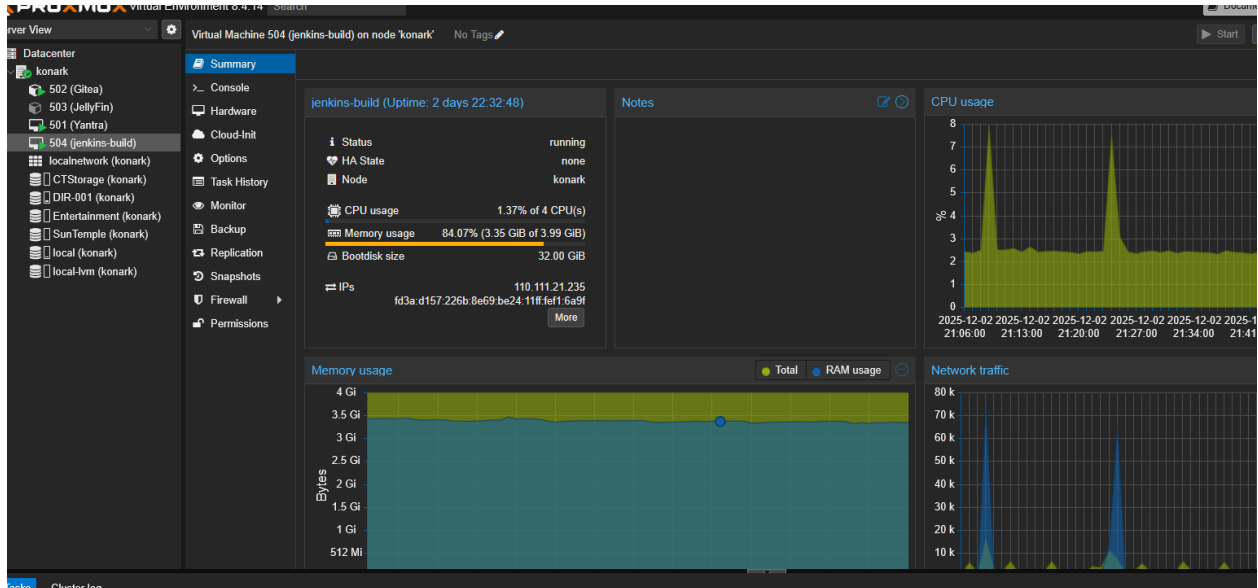
a sample build log is also added to github repo to view the results

Environment/Inventory:

#	Description	
1	GitHub repository	https://github.com/rakeshrranade/Edureka-IGP1
2	Docker Registry	https://hub.docker.com/r/rranade/edureka-igp
3	Jenkins	Running on a Ubuntu VM
4	Docker	Installed and configured on same VM
5	Microk8s	Installed and running on same VM
6	Jenkins File	[source_root]/.jenkins/jenkinsfile
7	Docker File	[source_root]/.docker/igp1.dockerfile
8	Deployment.yaml	[source_root]/.jenkins/.Kubernetes/deployment.yaml
9	Services.yaml	[source_root]/.jenkins/.Kubernetes/services.yaml
10	Build Log Output	[source_root]/Documentation/Jenkins_build_log_33.txt
11	Documents	[source_root]/Documentation

Installation Process...

1 Ubuntu VM Created on Proxmox



2 Jenkins Installed and Running

Documentation: <https://www.jenkins.io/doc/book/installing/linux/>

Commands Used:

```
sudo wget -O /etc/apt/keyrings/jenkins-keyring.asc \
https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key
echo "deb [signed-by=/etc/apt/keyrings/jenkins-keyring.asc] \
https://pkg.jenkins.io/debian-stable binary/" | sudo tee \
/etc/apt/sources.list.d/jenkins.list > /dev/null
sudo apt update
sudo apt install jenkins
```

```
jenkins@jenkins-build: ~  
jenkins@jenkins-build:~$ sudo systemctl status jenkins  
sudo] password for jenkins:  
jenkins.service - Jenkins Continuous Integration Server  
Loaded: loaded (/usr/lib/systemd/system/jenkins.service; enabled; preset: enabled)  
Active: active (running) since Wed 2025-12-03 01:33:31 UTC; 1h 43min ago  
Main PID: 792 (java)  
Tasks: 50 (Limit: 4590)  
Memory: 883.8M (peak: 919.0M)  
CPU: 41.886s  
CGroup: /system.slice/jenkins.service  
└─792 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins>  
Dec 03 01:33:30 jenkins-build jenkins[792]: 2025-12-03 01:33:30.481+0000 [id=40] INFO jenkins.InitReactor>  
Dec 03 01:33:30 jenkins-build jenkins[792]: 2025-12-03 01:33:30.484+0000 [id=45] INFO jenkins.InitReactor>  
Dec 03 01:33:30 jenkins-build jenkins[792]: 2025-12-03 01:33:30.752+0000 [id=40] INFO h.p.b.g.GlobalTime0>  
Dec 03 01:33:31 jenkins-build jenkins[792]: 2025-12-03 01:33:31.322+0000 [id=42] INFO jenkins.InitReactor>  
Dec 03 01:33:31 jenkins-build jenkins[792]: 2025-12-03 01:33:31.322+0000 [id=42] INFO jenkins.InitReactor>  
Dec 03 01:33:31 jenkins-build jenkins[792]: 2025-12-03 01:33:31.372+0000 [id=45] INFO jenkins.InitReactor>  
Dec 03 01:33:31 jenkins-build jenkins[792]: 2025-12-03 01:33:31.385+0000 [id=45] INFO jenkins.InitReactor>  
Dec 03 01:33:31 jenkins-build jenkins[792]: 2025-12-03 01:33:31.421+0000 [id=44] INFO jenkins.InitReactor>  
Dec 03 01:33:31 jenkins-build jenkins[792]: 2025-12-03 01:33:31.474+0000 [id=33] INFO hudson.lifecycle.Li>  
Dec 03 01:33:31 jenkins-build systemd[1]: Started jenkins.service - Jenkins Continuous Integration Server.  
lines 1-20/20 (END)
```

3 Docker Installed and Running

Documentation: <https://docs.docker.com/engine/install/ubuntu/>

Commands Used:

```
sudo apt install apt-transport-https ca-certificates curl software-properties-common
```

```
curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o  
/usr/share/keyrings/docker-archive-keyring.gpg
```

```
echo "deb [arch=$(dpkg --print-architecture) signed-by=/usr/share/keyrings/docker-archive-  
keyring.gpg] https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable" | sudo tee  
/etc/apt/sources.list.d/docker.list > /dev/null
```

```
sudo apt update
```

```
sudo apt install docker-ce docker-ce-cli containerd.io docker-buildx-plugin docker-compose-plugin
```

```
sudo usermod -aG docker $USER
```

```
sudo docker run hello-world
```

```

Dec 03 01:33:31 jenkins-build jenkins[792]: 2025-12-03 01:33:31.421+0000 [id=44] INFO jenkins.InitReactor
Dec 03 01:33:31 jenkins-build jenkins[792]: 2025-12-03 01:33:31.474+0000 [id=33] INFO hudson.lifecycle.Li
Dec 03 01:33:31 jenkins-build systemd[1]: Started jenkins.service - Jenkins Continuous Integration Server.
jenkins@jenkins-build:~$
jenkins@jenkins-build:~$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/usr/lib/systemd/system/docker.service; enabled; preset: enabled)
   Active: active (running) since Wed 2025-12-03 01:33:28 UTC; 1h 44min ago
   TriggeredBy: ● docker.socket
     Docs: https://docs.docker.com
    Main PID: 1319 (dockerd)
      Tasks: 12
     Memory: 168.7M (peak: 201.0M)
        CPU: 4.090s
    CGroup: /system.slice/docker.service
            └─1319 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

Dec 03 02:23:43 jenkins-build dockerd[1319]: time="2025-12-03T02:23:43.926738309Z" level=info msg="detected 127.0.0.53 >
Dec 03 02:23:44 jenkins-build dockerd[1319]: time="2025-12-03T02:23:44.079234098Z" level=info msg="sbJoin: gwep4 ''->'0>
Dec 03 02:23:45 jenkins-build dockerd[1319]: time="2025-12-03T02:23:45.855031574Z" level=info msg="detected 127.0.0.53 >
Dec 03 02:23:46 jenkins-build dockerd[1319]: time="2025-12-03T02:23:46.077658702Z" level=info msg="sbJoin: gwep4 ''->'e>
Dec 03 02:23:50 jenkins-build dockerd[1319]: time="2025-12-03T02:23:50.506331883Z" level=info msg="detected 127.0.0.53 >
Dec 03 02:23:50 jenkins-build dockerd[1319]: time="2025-12-03T02:23:50.698175360Z" level=info msg="sbJoin: gwep4 ''->'2>
Dec 03 02:23:50 jenkins-build dockerd[1319]: time="2025-12-03T02:23:50.995210900Z" level=warning msg="forcibly turning >
Dec 03 02:23:56 jenkins-build dockerd[1319]: time="2025-12-03T02:23:56.101299248Z" level=info msg="sbJoin: gwep4 ''->'9>
Dec 03 02:23:58 jenkins-build dockerd[1319]: time="2025-12-03T02:23:58.649878475Z" level=info msg="ignoring event" cont>
Dec 03 02:24:01 jenkins-build dockerd[1319]: time="2025-12-03T02:24:01.177344583Z" level=info msg="image created" image>
lines 1-22/22 (END)

```

4 Jenkins Pipeline Configured



Jenkins / Edureka-IGP

Status

Edureka-IGP

Edureka IGP Pipeline, build a dotnet project in docker image and then deploy it to docker hub

Permalinks

- [Last build \(#33\), 1 hr 4 min ago](#)
- [Last stable build \(#33\), 1 hr 4 min ago](#)
- [Last successful build \(#33\), 1 hr 4 min ago](#)
- [Last failed build \(#32\), 1 hr 20 min ago](#)
- [Last unsuccessful build \(#32\), 1 hr 20 min ago](#)
- [Last completed build \(#33\), 1 hr 4 min ago](#)

- Changes
- Build Now
- Configure
- Delete Pipeline
- Stages
- Rename
- Pipeline Syntax
- Credentials

Builds

Filter

Today

- ✓ #33 2:23 AM
- ✗ #32 2:08 AM
- ✗ #31 1:48 AM
- ✗ #30 1:29 AM
- ✗ #29 1:25 AM
- ✗ #28 1:24 AM
- ✗ #27 1:21 AM
- ✗ #26 1:17 AM

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- ✓ #25 9:18 AM



Jenkins / All / Build History

+ New Item

Build History

Build Queue

No builds in the queue.

Build Executor Status

0/2

Build History of Jenkins

S	Build	Time Since 1	Status
✓	Edureka-IGP #33	1 hr 7 min	back to normal
✗	Edureka-IGP #32	1 hr 22 min	broken since build #26
✗	Edureka-IGP #31	1 hr 42 min	broken since build #26
✗	Edureka-IGP #30	2 hr 1 min	broken since build #26
✗	Edureka-IGP #29	2 hr 5 min	broken since build #26
✗	Edureka-IGP #28	2 hr 6 min	broken since build #26
✗	Edureka-IGP #27	2 hr 9 min	broken since build #26
✗	Edureka-IGP #26	2 hr 13 min	broken since this build
✓	Edureka-IGP #25	6 days 18 hr	back to normal
✗	Edureka-IGP #24	6 days 18 hr	broken since build #19
✗	Edureka-IGP #23	6 days 18 hr	broken since build #19
✗	Edureka-IGP #22	6 days 18 hr	broken since build #19
✗	Edureka-IGP #21	6 days 18 hr	broken since build #19
✗	Edureka-IGP #20	6 days 18 hr	broken since build #19
✗	Edureka-IGP #19	6 days 18 hr	broken since this build

Jenkins pipeline is configured to pull the pipeline file from github repository

The image shows two screenshots of the Jenkins Pipeline Configuration page. The top screenshot shows the 'Repository browser' set to '(Auto)', 'Script Path' as '.jenkins/jenkinsfile', and 'Lightweight checkout' checked. The bottom screenshot shows the 'Branches to build' section with two entries: '*/*master' and '*/*main'.

Repository browser ?
(Auto)

Additional Behaviours
+ Add

Script Path ?
.jenkins/jenkinsfile

☒ **Lightweight checkout** ?

[Pipeline Syntax](#)

Advanced

Branches to build ?

Branch Specifier (blank for 'any') ?
*/master

Branch Specifier (blank for 'any') ?
*/main

Repository browser ?
(Auto)

Additional Behaviours
+ Add

Script Path ?
.jenkins/jenkinsfile

☒ **Lightweight checkout** ?

[Pipeline Syntax](#)

Advanced

Additional commands used while testing

```
docker build -f .docker/igp1.dockerfile -t edureka-igp1:7 .
```

```
docker run -it --name igp edureka-igp1:7 /bin/bash
```



```
dotnet publish /src/src/Edureka-igp1/Edureka-igp1.csproj -c Release -o /app/publish --  
no-restore -p:PublishTrimmed=true --runtime linux-x64  
dotnet build --runtime linux-x64 -c Debug -o ~/app/debug ./Edureka-igp1.csproj
```

```
docker run -d -p 8090:5000 --name edureka-igp edureka-igp1:7
```

<http://localhost:8090/Privacy>