

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

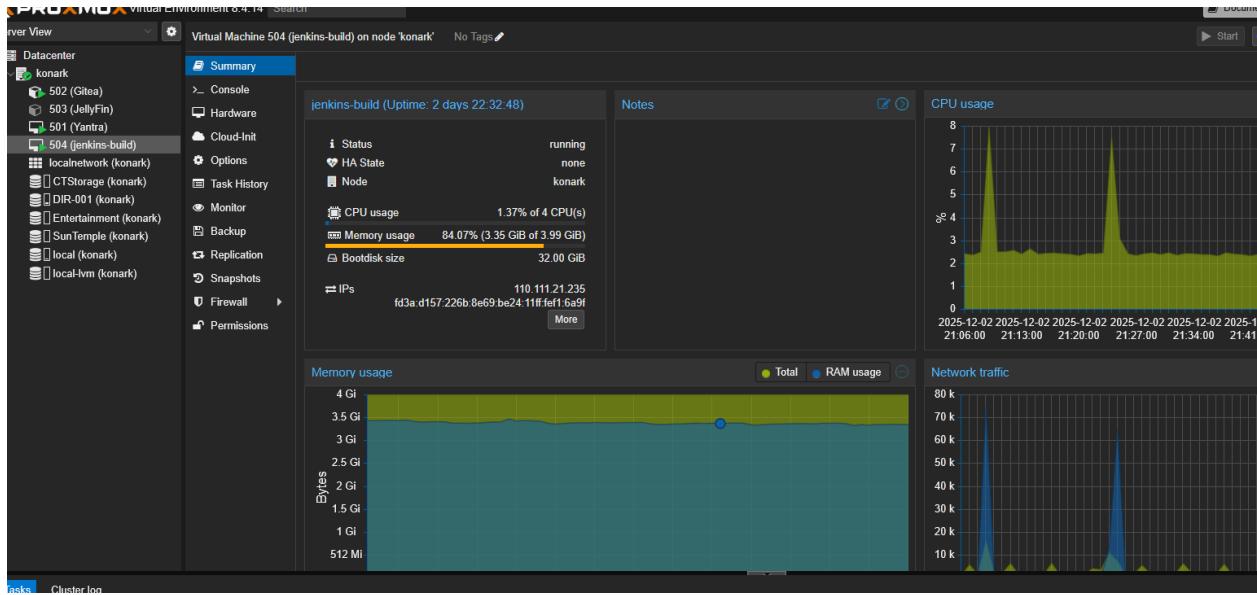
a sample build log is also added to github repo to view the results

Environment/Inventory:

#	Description
1	GitHub repository https://github.com/rakeshranade/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

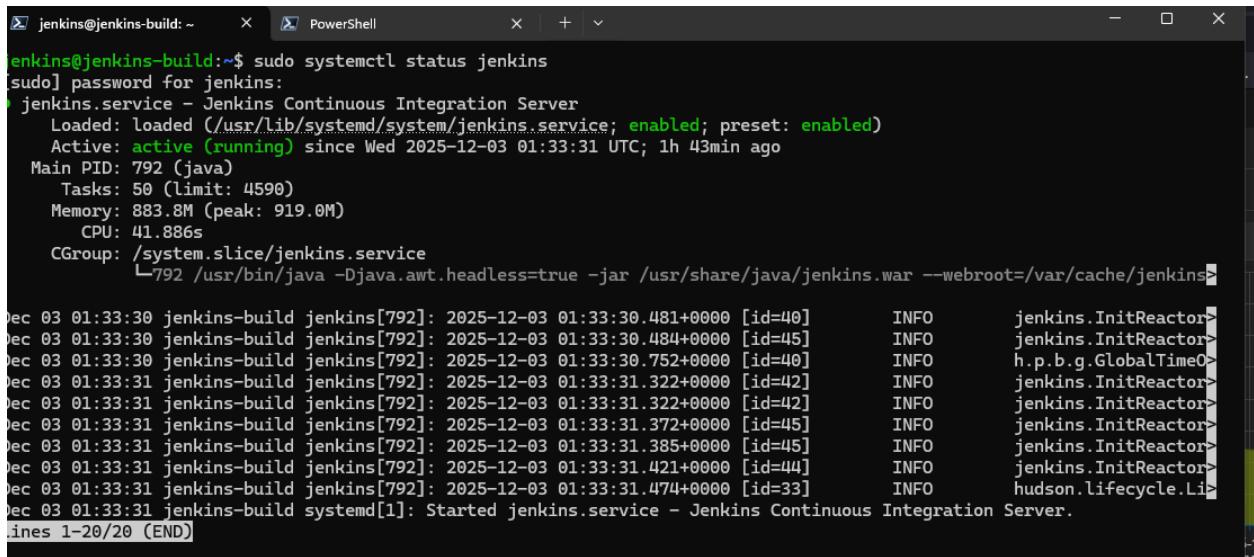


2 Jenkins Installed and Running

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
```



A screenshot of a terminal window titled "PowerShell". The command "sudo systemctl status jenkins" is run, showing the Jenkins service is active (running) since Dec 03 01:33:31 UTC. The service has a Main PID of 792 and is using 883.8M of memory. The log output shows multiple INFO messages from Jenkins components like InitReactor, GlobalTime, and Lifecycle. The log ends with "Started jenkins.service - Jenkins Continuous Integration Server".

```
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.GlobalTimeO>
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
```

```
8 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
9 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

Course Curriculum | Edureka

Edureka-IGP - Jenkins

Not Secure http://110.111.21.235:8080/job/Edureka-IGP/

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 Jenkins / Edureka-IGP

Status

Changes

Build Now

Configure

Delete Pipeline

Stages

Rename

Pipeline Syntax

Credentials

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

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	Status
1	Edureka-IGP #33	1 hr 7 min	back to normal
2	Edureka-IGP #32	1 hr 22 min	broken since build #26
3	Edureka-IGP #31	1 hr 42 min	broken since build #26
4	Edureka-IGP #30	2 hr 1 min	broken since build #26
5	Edureka-IGP #29	2 hr 5 min	broken since build #26
6	Edureka-IGP #28	2 hr 6 min	broken since build #26
7	Edureka-IGP #27	2 hr 9 min	broken since build #26
8	Edureka-IGP #26	2 hr 13 min	broken since this build
9	Edureka-IGP #25	6 days 18 hr	back to normal
10	Edureka-IGP #24	6 days 18 hr	broken since build #19
11	Edureka-IGP #23	6 days 18 hr	broken since build #19
12	Edureka-IGP #22	6 days 18 hr	broken since build #19
13	Edureka-IGP #21	6 days 18 hr	broken since build #19
14	Edureka-IGP #20	6 days 18 hr	broken since build #19
15	Edureka-IGP #19	6 days 18 hr	broken since this build

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

The screenshot shows the Jenkins Pipeline configuration page. At the top, there is a section for 'Repository browser' with '(Auto)' selected. Below it, 'Additional Behaviours' has a '+ Add' button. Under 'Script Path', the value 'jenkins/jenkinsfile' is entered. A checked checkbox for 'Lightweight checkout'. The 'Pipeline Syntax' link is visible. In the 'Advanced' section, 'Branches to build' is expanded, showing two entries: 'Branch Specifier (blank for 'any')' with value '*/master' and another entry with value '*/main'. Other sections like '+ Add Branch', 'Repository browser', 'Additional Behaviours', 'Script Path', 'Lightweight checkout', and 'Pipeline Syntax' are also present.

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
```