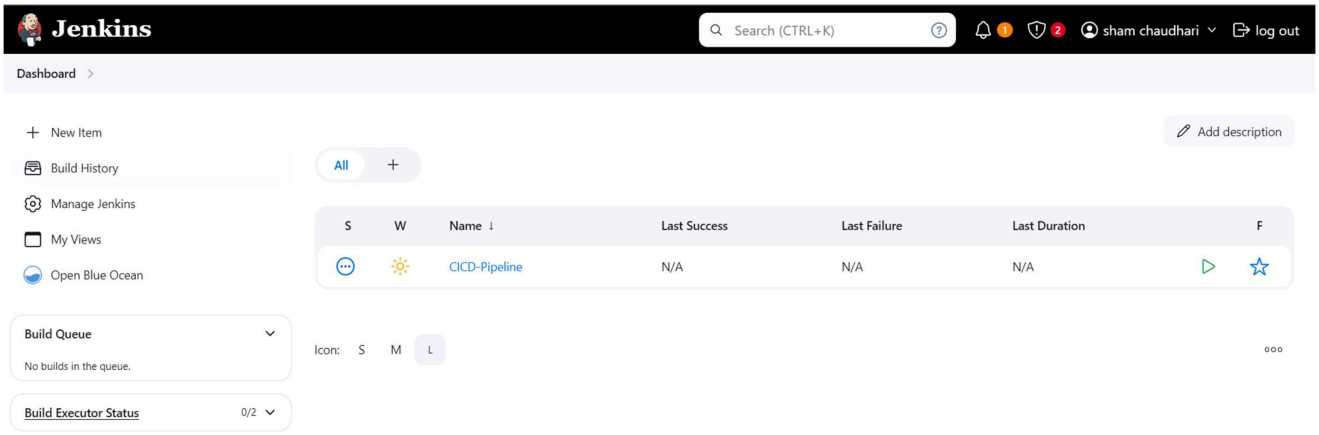
Problem Statement II

1. Set up Jenkins Environment

Jenkins master server setup:

```
root@jenkins-m:~# jenkins --version
2.479.2
root@jenkins-m:~# java --version
openjdk 17.0.13 2024-10-15
OpenJDK Runtime Environment (build 17.0.13+11-Ubuntu-2ubuntu120.04)
OpenJDK 64-Bit Server VM (build 17.0.13+11-Ubuntu-2ubuntu120.04, mixed mode, sharing)
root@jenkins-m:~# ansible --version
ansible [core 2.12.10]
  config file = /etc/ansible/ansible.cfg
  configured module search path = ['/root/.ansible/plugins/modules', '/usr/share/ansible/
plugins/modules']
  ansible python module location = /usr/lib/python3/dist-packages/ansible
  ansible collection location = /root/.ansible/collections:/usr/share/ansible/collections
  executable location = /usr/bin/ansible
  python version = 3.8.10 (default, Nov  7 2024, 13:10:47) [GCC 9.4.0]
  jinja version = 2.10.1
  libyaml = True
root@jenkins-m:~# git --version
git version 2.25.1
root@jenkins-m:~#
```



2. Kubernetes cluster set up for deploying images.

Setup Kubernetes master:

```
root@kube-master:~# docker -v
Docker version 27.4.1, build b9d17ea
root@kube-master:~#    cri-dockerd --version
cri-dockerd 0.3.4 (e88b1605)
root@kube-master:~#    kubeadm version -o short
v1.29.12
root@kube-master:~#    kubelet --version
Kubernetes v1.29.12
root@kube-master:~#    kubectl version --client
Client Version: v1.29.12
Kustomize Version: v5.0.4-0.20230601165947-6ce0bf390ce3
root@kube-master:~#
```

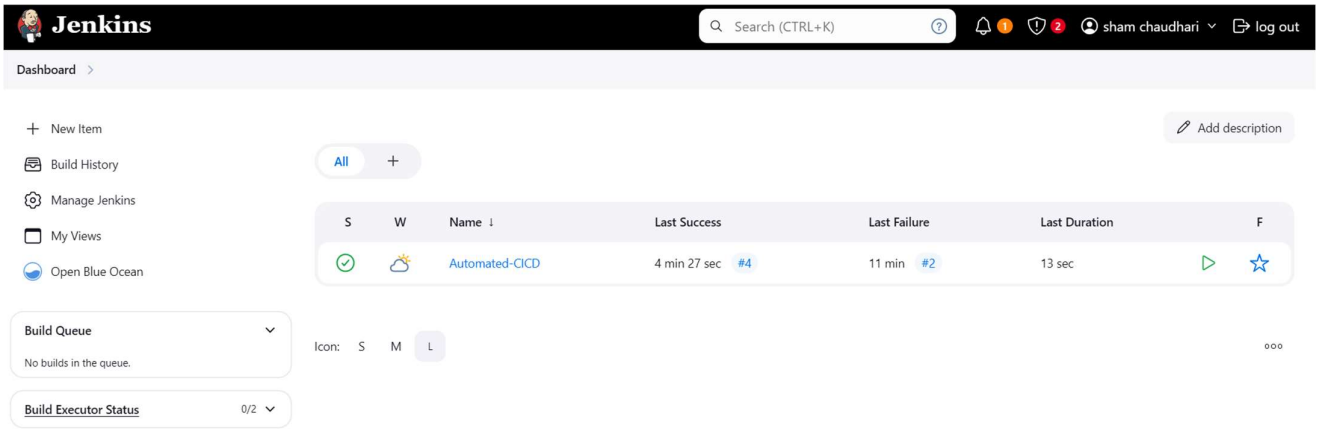
Setup worker node:

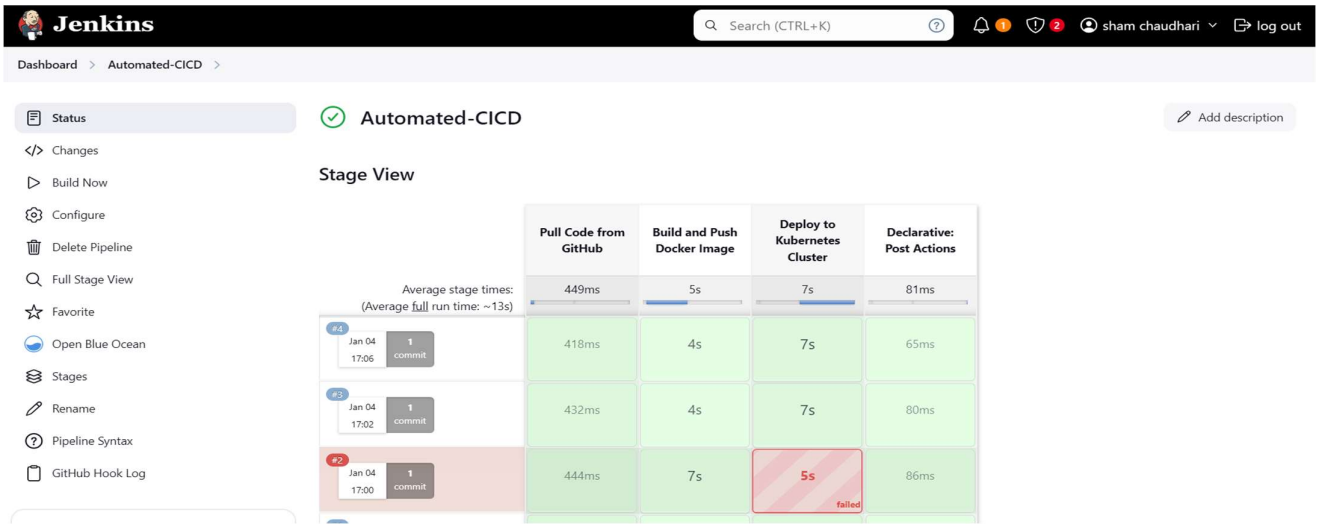
```
root@node1:~# docker -v
Docker version 27.4.1, build b9d17ea
root@node1:~#    cri-dockerd --version
cri-dockerd: command not found
root@node1:~#    kubeadm version -o short
v1.29.12
root@node1:~#    kubelet --version
Kubernetes v1.29.12
root@node1:~#    kubectl version --client
Client Version: v1.29.12
Kustomize Version: v5.0.4-0.20230601165947-6ce0bf390ce3
root@node1:~#
```

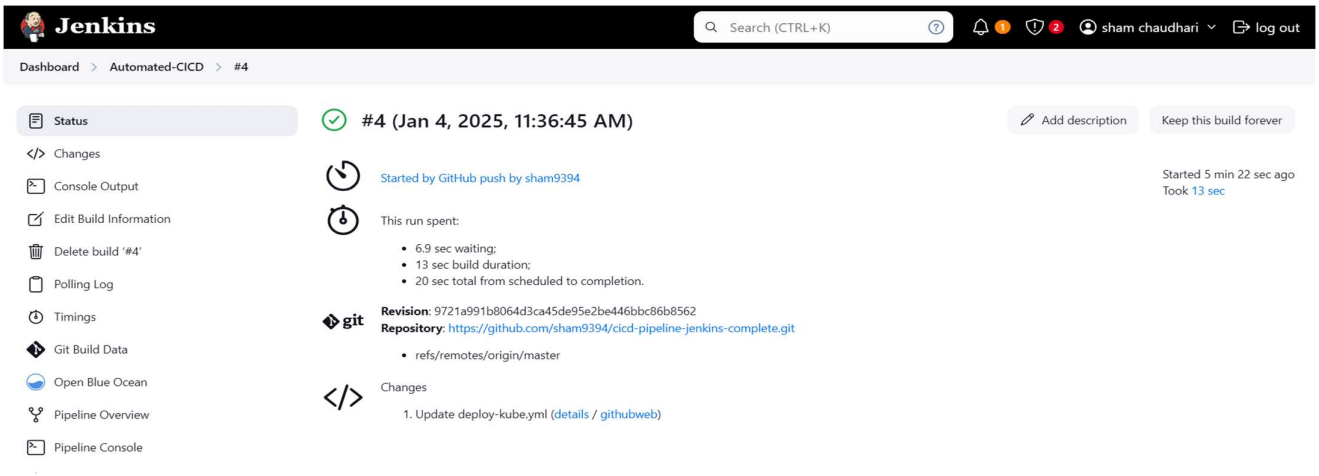
Connect worker node to master:

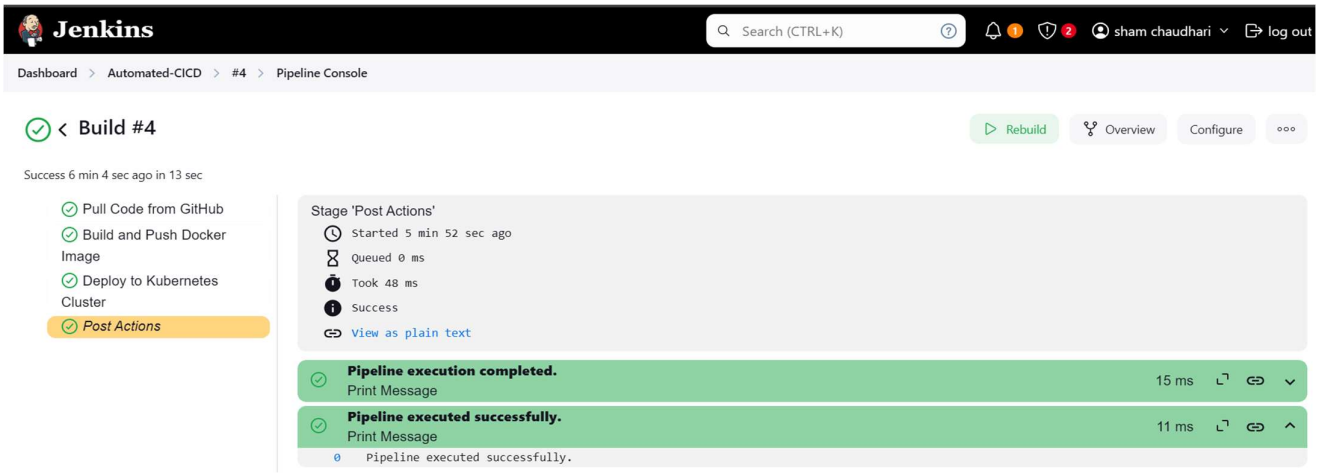
```
root@kube-master:~# kubectl get node
NAME          STATUS   ROLES           AGE     VERSION
kube-master   Ready    control-plane   21m     v1.29.12
node1         Ready    <none>          4m41s   v1.29.12
root@kube-master:~#
```

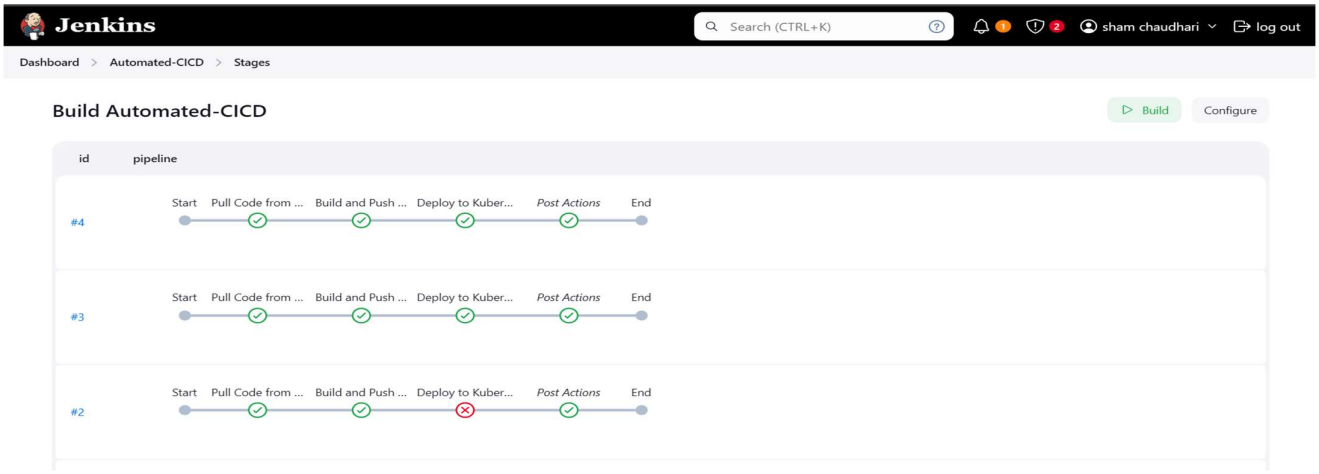
3. Create automated CICD pipeline

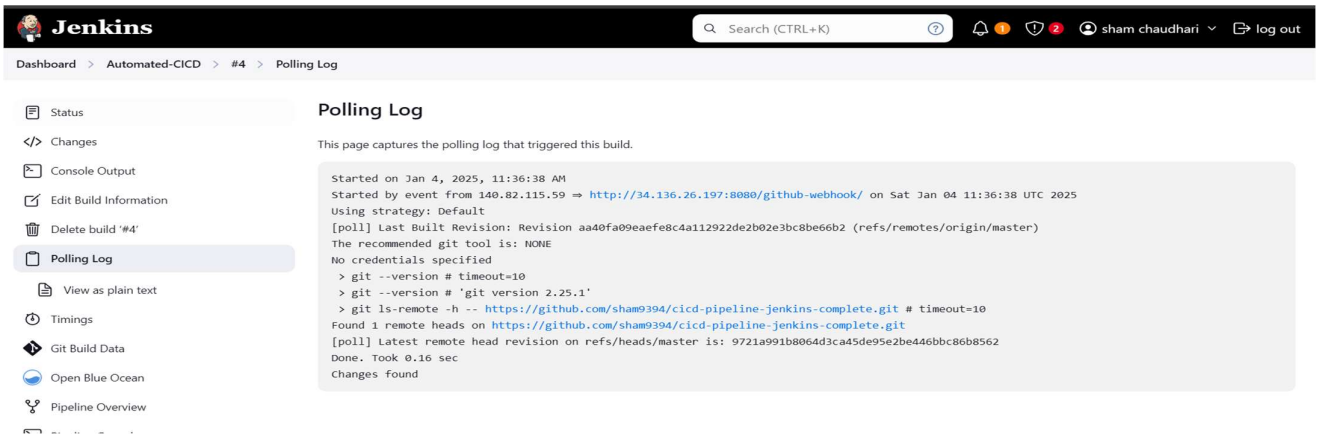





Jenkins
Search (CTRL+K)
sham chaudhari
log out
Dashboard > Automated-CICD > #4
Status
Changes
Console Output
Edit Build Information
Delete build '#4'
Polling Log
Timings
Git Build Data
Open Blue Ocean
Pipeline Overview
Pipeline Console
#4 (Jan 4, 2025, 11:36:45 AM)
Add description
Keep this build forever
Started by GitHub push by sham9394
Started 5 min 22 sec ago
Took 13 sec
This run spent:
6.9 sec waiting;
13 sec build duration;
20 sec total from scheduled to completion.
Revision: 9721a991b8064d3ca45de95e2be446bbc86b8562
Repository: https://github.com/sham9394/cicd-pipeline-jenkins-complete.git
refs/remotes/origin/master
Changes
1. Update deploy-kube.yml (details / githubweb)


Jenkins
Search (CTRL+K)
sham chaudhari
log out
Dashboard > Automated-CICD > #4 > Pipeline Console
Build #4
Rebuild
Overview
Configure
Success 6 min 4 sec ago in 13 sec
Pull Code from GitHub
Build and Push Docker Image
Deploy to Kubernetes Cluster
Post Actions
Stage 'Post Actions'
Started 5 min 52 sec ago
Queued 0 ms
Took 48 ms
Success
View as plain text
Pipeline execution completed.
Print Message
15 ms
Pipeline executed successfully.
Print Message
11 ms
0 Pipeline executed successfully.


Jenkins
Search (CTRL+K)
sham chaudhari
log out
Dashboard > Automated-CICD > Stages
Build Automated-CICD
Build
Configure
id
pipeline
#4
#3
#2
Start
Pull Code from ...
Build and Push ...
Deploy to Kuber...
Post Actions
End


Jenkins
Search (CTRL+K)
sham chaudhari
log out
Dashboard > Automated-CICD > #4 > Polling Log
Status
Changes
Console Output
Edit Build Information
Delete build '#4'
Polling Log
View as plain text
Timings
Git Build Data
Open Blue Ocean
Pipeline Overview
Polling Log
This page captures the polling log that triggered this build.
Started on Jan 4, 2025, 11:36:38 AM
Started by event from 140.82.115.59 => http://34.136.26.197:8080/github-webhook/ on Sat Jan 04 11:36:38 UTC 2025
Using strategy: Default
[poll] Last Built Revision: Revision aa40fa09eaefe8c4a112922de2b02e3bc8be66b2 (refs/remotes/origin/master)
The recommended git tool is: NONE
No credentials specified
> git --version # timeout=10
> git --version # 'git version 2.25.1'
> git ls-remote -h -- https://github.com/sham9394/cicd-pipeline-jenkins-complete.git # timeout=10
Found 1 remote heads on https://github.com/sham9394/cicd-pipeline-jenkins-complete.git
[poll] Latest remote head revision on refs/heads/master is: 9721a991b8064d3ca45de95e2be446bbc86b8562
Done. Took 0.16 sec
Changes found

4. Verify on Kubernetes master VM:

```
root@kube-master:~# kubectl get pods -o wide
NAME                                          READY   STATUS    RESTARTS   AGE     IP              NODE    NOMINATED NODE   READINESS GATES
train-schedule-deployment-69f5999dc6-8ptq8    1/1     Running   0          8m49s   192.168.166.172   node1   <none>           <none>
train-schedule-deployment-69f5999dc6-hwn9h    1/1     Running   0          8m49s   192.168.166.171   node1   <none>           <none>
train-schedule-deployment-canary-566d6d9685-6sk9s   1/1     Running   0          8m50s   192.168.166.170   node1   <none>           <none>
train-schedule-deployment-canary-566d6d9685-thqtv   1/1     Running   0          8m50s   192.168.166.169   node1   <none>           <none>
root@kube-master:~# kubectl get node -o wide
NAME          STATUS   ROLES           AGE     VERSION    INTERNAL-IP   EXTERNAL-IP   OS-IMAGE             KERNEL-VERSION    CONTAINER-RUNTIME
kube-master   Ready    control-plane   5h32m   v1.29.12   10.128.0.26   <none>        Ubuntu 20.04.6 LTS   5.15.0-1073-gcp   docker://27.4.1
node1         Ready    <none>          5h16m   v1.29.12   10.128.0.27   <none>        Ubuntu 20.04.6 LTS   5.15.0-1073-gcp   docker://27.4.1
root@kube-master:~# kubectl get deployment -o wide
NAME                             READY   UP-TO-DATE   AVAILABLE   AGE   CONTAINERS       IMAGES                       SELECTOR
train-schedule-deployment        2/2     2            2           10m   train-schedule   sham9394/train-schedule:4    app=train-schedule,track=stable
train-schedule-deployment-canary   2/2     2            2           10m   train-schedule   sham9394/train-schedule:4    app=train-schedule,track=canary
root@kube-master:~# kubectl get svc -o wide
NAME                         TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)          AGE     SELECTOR
kubernetes                   ClusterIP   10.96.0.1        <none>        443/TCP          5h33m   <none>
train-schedule-service       NodePort    10.106.206.180   <none>        8080:30002/TCP   40m     app=train-schedule
train-schedule-service-canary   NodePort    10.108.240.152   <none>        8080:30001/TCP   48m     app=train-schedule,track=canary
root@kube-master:~#
```