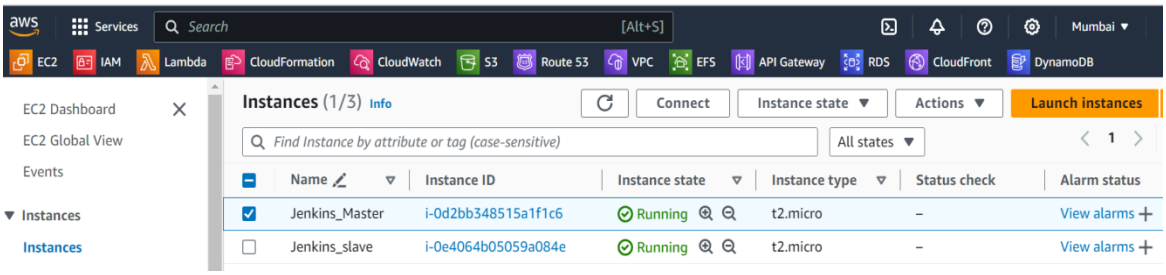
Name :- Komal Mhetre

Role :- DevOps Engineer

Task :- Continuous Integration Using Jenkins

- **Assignments Continuous Integration Using Jenkins:-**
- L1 - Create Jenkins Master-Slave Configurations and Create a workspace in Jenkins Slave Node using Jenkins Free-style project.

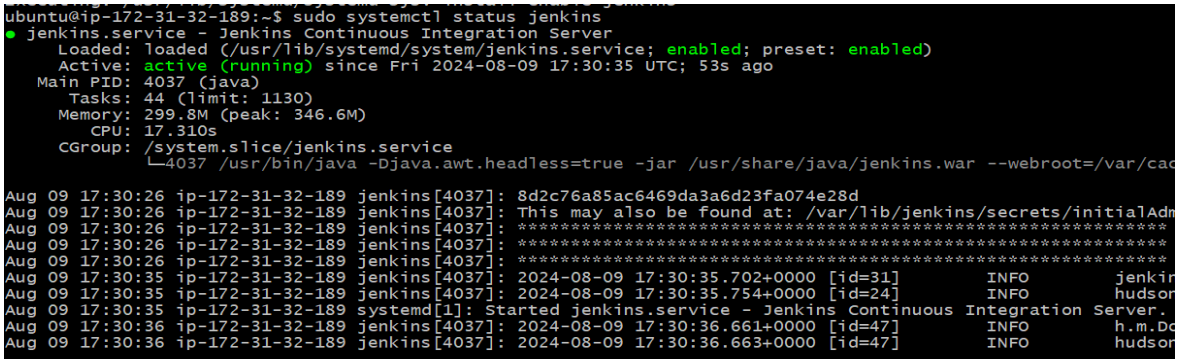
1. Create two EC2 instances running Ubuntu: one for the Jenkins master and another for the Jenkins slave.



2. Connect the instance to your terminal using SSH connection.

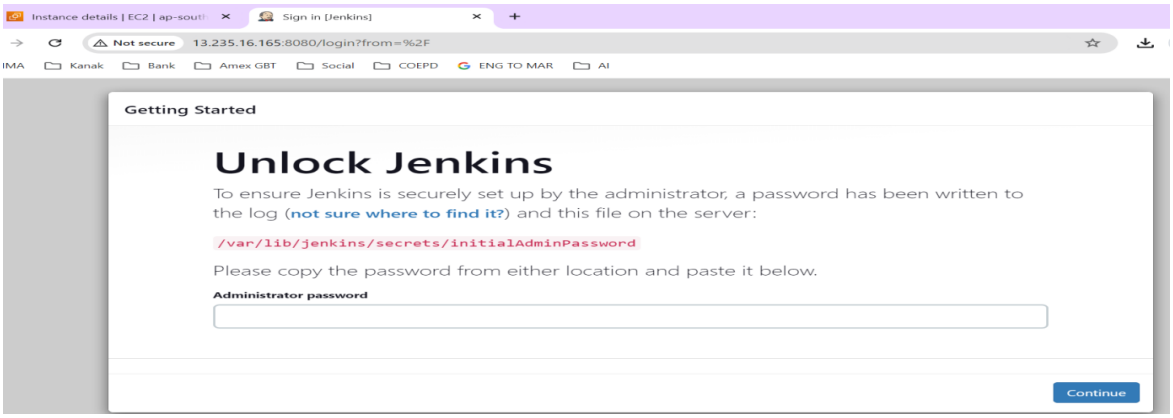
```
ubuntu@ip-172-31-32-189:~$ curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key| sudo tee \
  /usr/share/keyrings/jenkins-keyring.asc > /dev/null
ubuntu@ip-172-31-32-189:~$ echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \
  https://pkg.jenkins.io/debian-stable binary/ | sudo tee \
  /etc/apt/sources.list.d/jenkins.list > /dev/null
ubuntu@ip-172-31-32-189:~$ sudo apt-get update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Ign:4 https://pkg.jenkins.io/debian-stable binary/ InRelease
Get:5 https://pkg.jenkins.io/debian-stable binary/ Release [2044 B]
Get:6 https://pkg.jenkins.io/debian-stable binary/ Release.gpg [833 B]
Hit:7 http://security.ubuntu.com/ubuntu noble-security InRelease
Get:8 https://pkg.jenkins.io/debian-stable binary/ Packages [27.6 kB]
Fetched 30.4 kB in 1s (40.4 kB/s)
Reading package lists... Done
ubuntu@ip-172-31-32-189:~$ sudo apt-get install jenkins
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  net-tools
The following NEW packages will be installed:
  jenkins net-tools
```

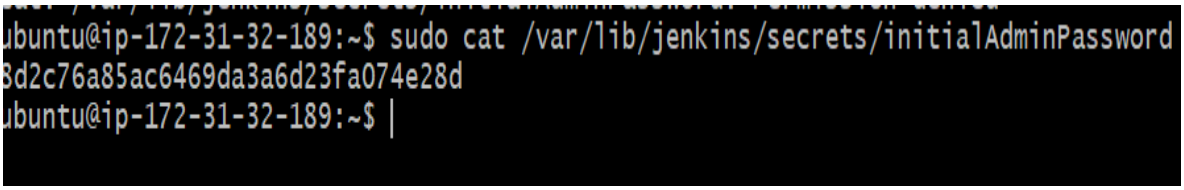
3. Check the Jenkins status. Whether it is running or not.



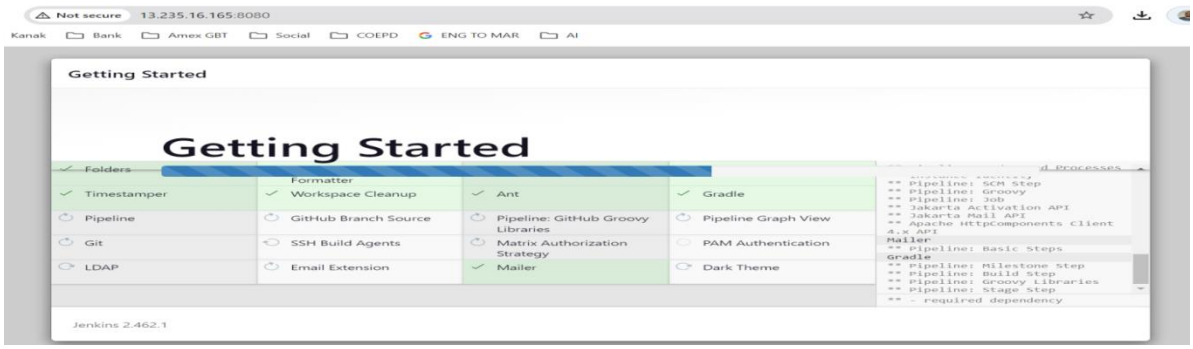
4. Configure Jenkins master-slave :-

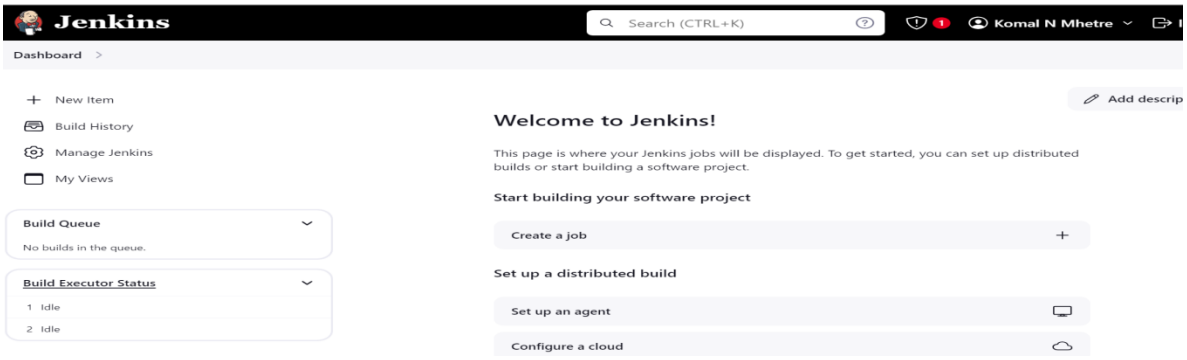
- If port 8080 is not functioning for Jenkins, navigate to the server, choose the security settings edit the inbond rule, and include port 8080. Save the modification and the access it through the browser, it should be operational now.





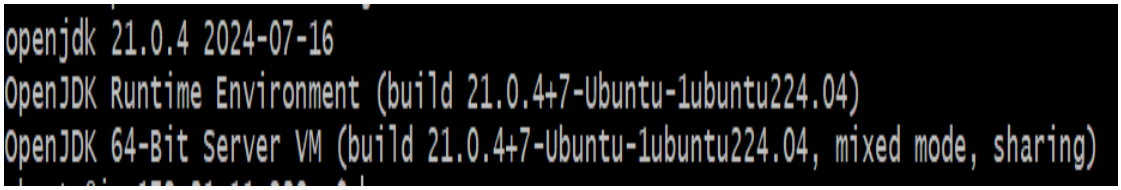
5. Continue with the Jenkins setup in the web interface, selecting plugins, creating an admin user, And configuring Jenkins.



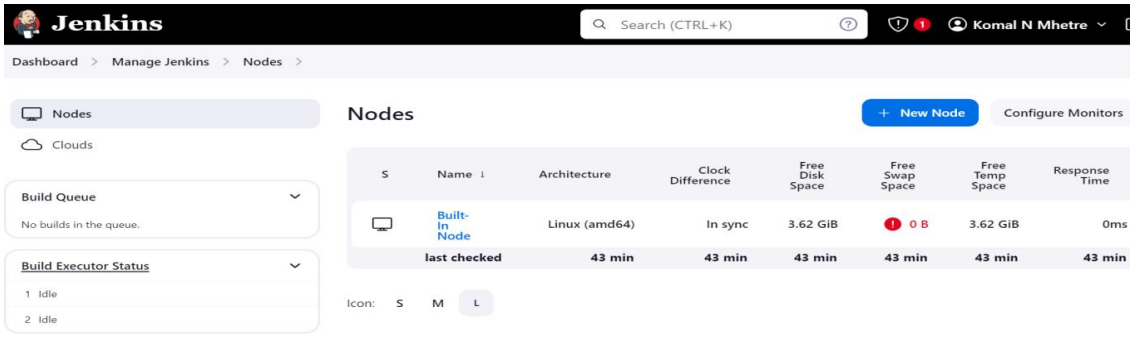


6. Jenkins slave setup :-

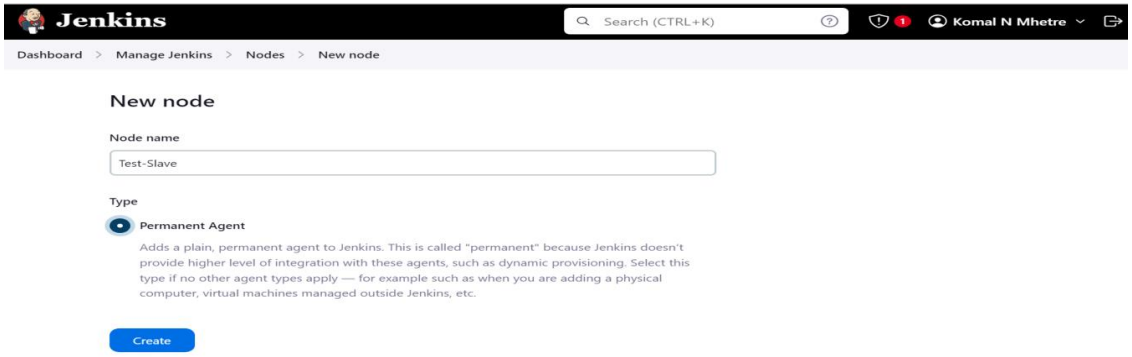
- On the slave node ensure java installed.



7. Create new node…
   Go to “Manage Jenkins”> “Manage Nodes and Clouds”>”New Node”.



8. Give the node name and select the type **permanent Agent.**



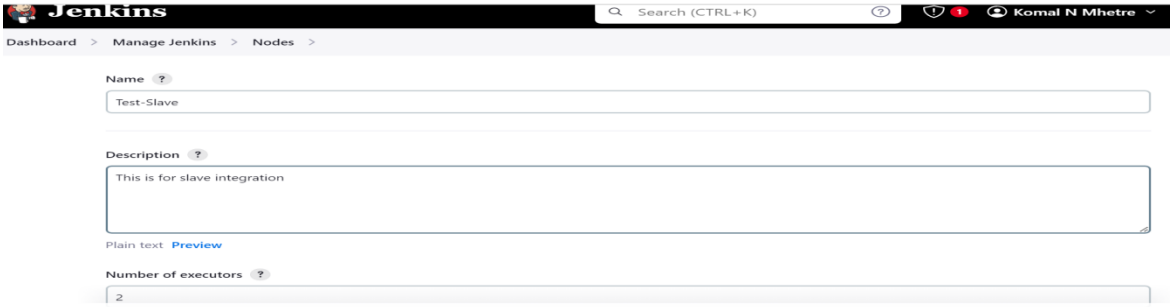
9. First lets create a directory where our Jenkins save the build logs or the work we execute. Create in slave node.

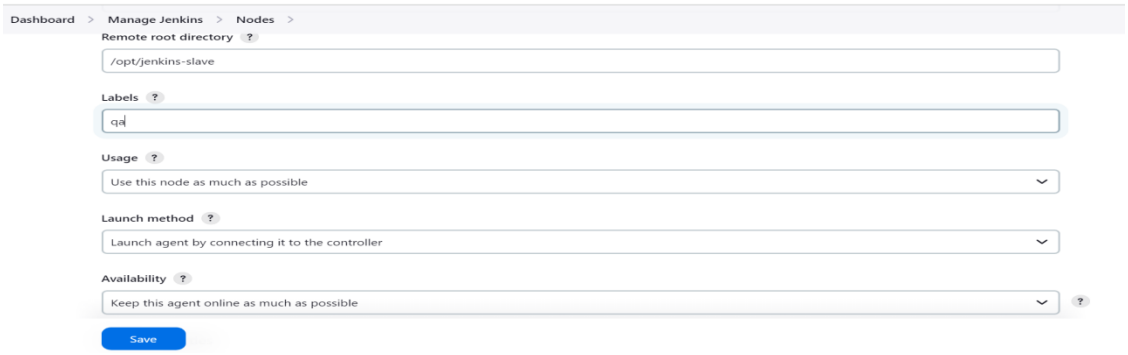
```
ubuntu@ip-172-31-43-31:~$ sudo su
root@ip-172-31-43-31:/home/ubuntu# cd /opt/
root@ip-172-31-43-31:/opt# mkdir jenkins
root@ip-172-31-43-31:/opt# cd jenkins/
root@ip-172-31-43-31:/opt/jenkins# cd ..
root@ip-172-31-43-31:/opt# ls
jenkins
root@ip-172-31-43-31:/opt# chmod 755 jenkins
root@ip-172-31-43-31:/opt# cd jenkins/
root@ip-172-31-43-31:/opt/jenkins# pwd
/opt/jenkins
root@ip-172-31-43-31:/opt/jenkins#
```

10. Configure the node…

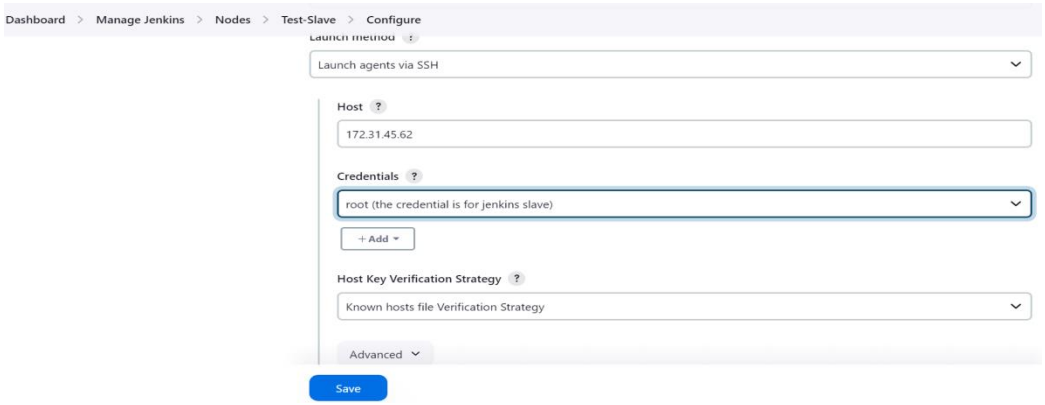
- **Name :** Create for new node and provide “Name”
- **Description :** Add a description for the node (optional)
- **Executors :** Number of executors
- **Remote root directory :** Path of the directory

- **Labels:** Add labels to categorize the node (e.g., slave1)
- **Usage:** Choose "Use this node as much as possible" to make this node available for builds.





- Give the hostname and the credentials we created.

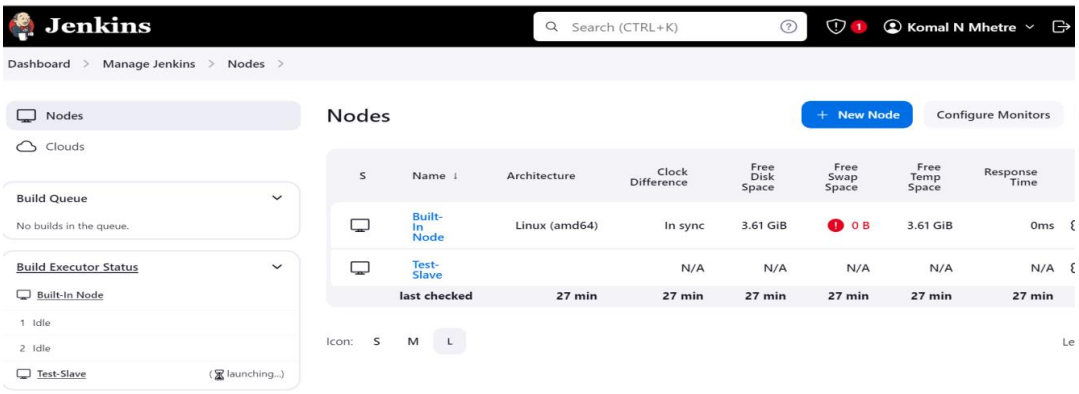


```
root@ip-172-31-45-62:/opt/jenkins-slave# ssh-keygen
Generating public/private ed25519 key pair.
Enter file in which to save the key (/root/.ssh/id_ed25519):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_ed25519
Your public key has been saved in /root/.ssh/id_ed25519.pub
The key fingerprint is:
SHA256:a+qNuqDt74JKJyNss9e84Otmr0a8eJC6p84iXz+hrYU root@ip-172-31-45-62
The key's randomart image is:
+--[ED25519 256]--+
|                 |
|                 |
|                 |
|     o   S       |
|.  o +.  .       |
|.Oo.E*o.o        |
|O+B*=X+=         |
|BOO+XXXo.        |
+----[SHA256]-----+
root@ip-172-31-45-62:/opt/jenkins-slave# ls
root@ip-172-31-45-62:/opt/jenkins-slave# cd /root/.ssh/
root@ip-172-31-45-62:~/.ssh# ls
authorized_keys  id_ed25519  id_ed25519.pub
root@ip-172-31-45-62:~/.ssh# cat id_ed25519
-----BEGIN OPENSSH PRIVATE KEY-----
b3BlbnNzaC1rZXktdjEAAAAABG5vbmUAAAAEbm9uZQAAAAAAAAABAAAAMwAAAAtzc2gtZW
QyNTUxOQAAACBMMbP3WsTImJ1rKubz8oLz/Ex1kpjb1c3qrZOmFhvyTwAAAJhaLFpQWixa
UAAAAAtzc2gtZWQyNTUxOQAAACBMMbP3WsTImJ1rKubz8oLz/Ex1kpjb1c3qrZOmFhvyTw
AAAECz9WUrpISClLjY8iG9WEM93/sk0tbER3Mj5WRfWmVMNEwxs/daxMiYmKsq5vPygvP8
TGWSmNuVzeqtnSYWG/JPAAAAFHJvb3RAaXAtMTcyLTMxLTQ1LTYyAQ==
-----END OPENSSH PRIVATE KEY-----
root@ip-172-31-45-62:~/.ssh#
```

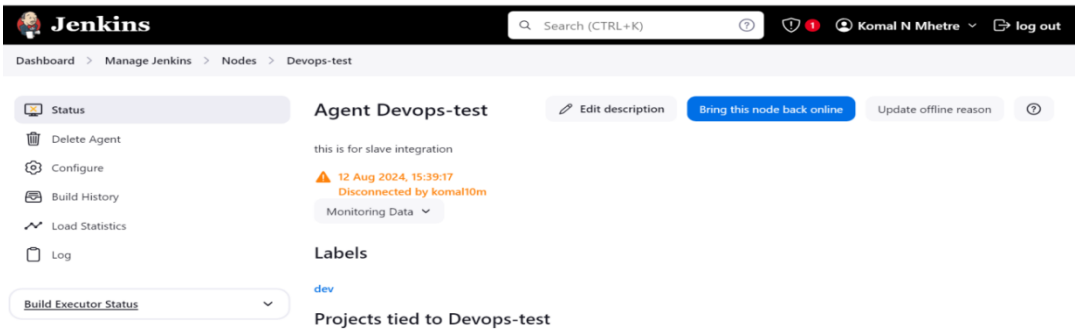
- Add credentials for slave-node connection.

- Copy and paste private-key under key section and add it.

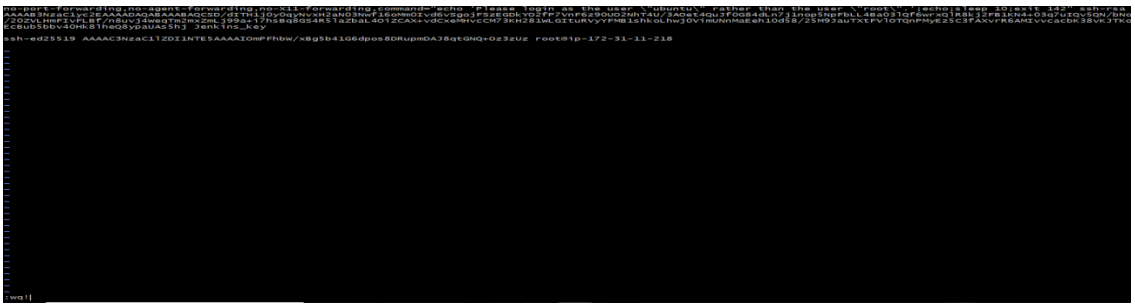
- Save the configuration and start the node. If you're using SSH, Jenkins will automatically connect to the node.



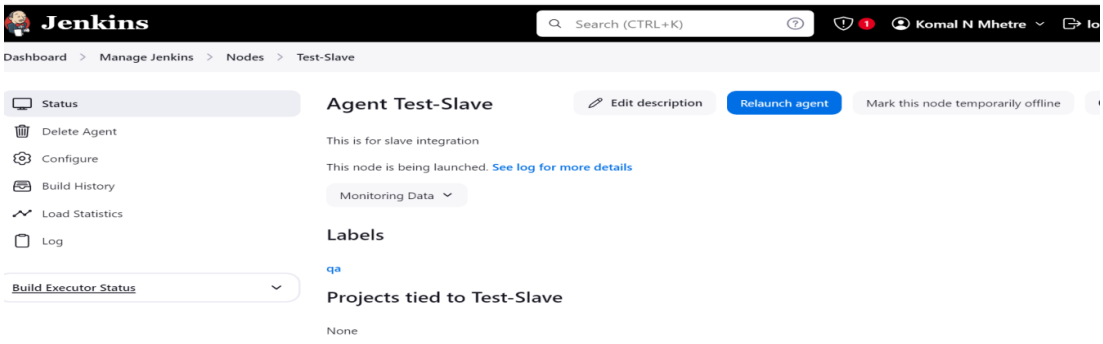
- The agent is offline and we need to connect it.



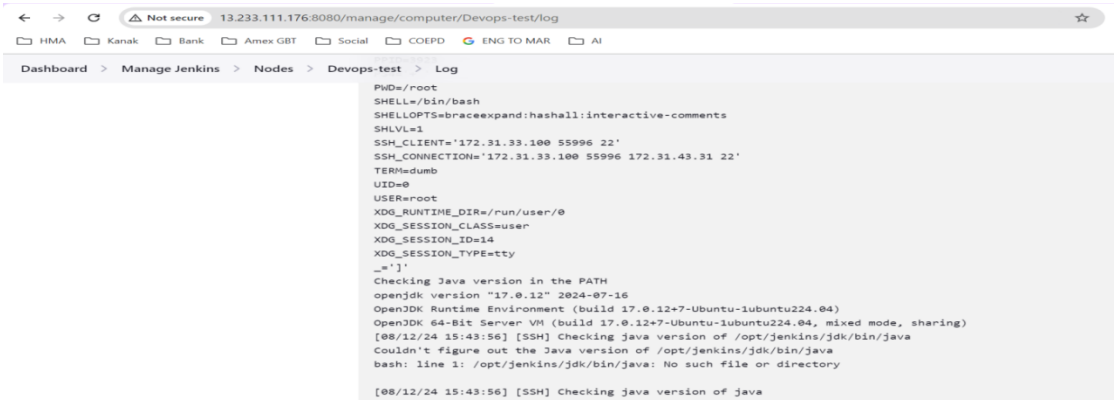
- Inside the slave node copy the public-key under Authorized_keys paste the public-key.

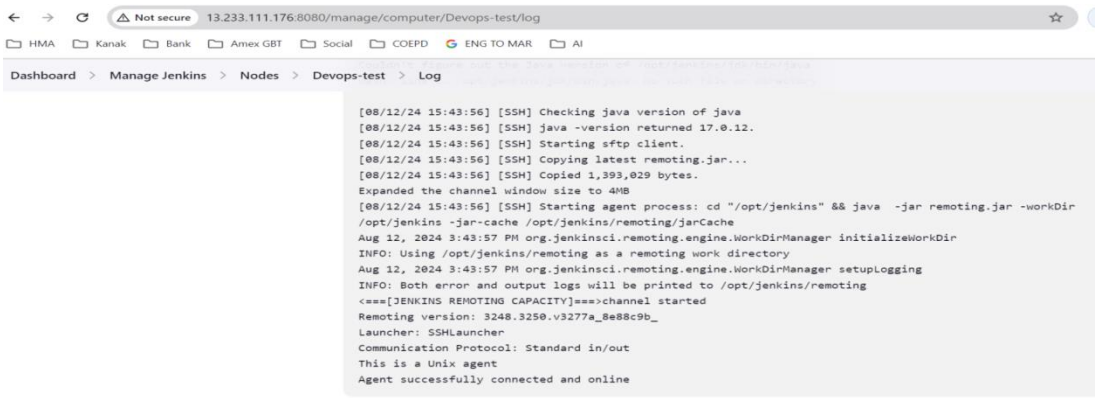


- Now click the **Launch Agent**

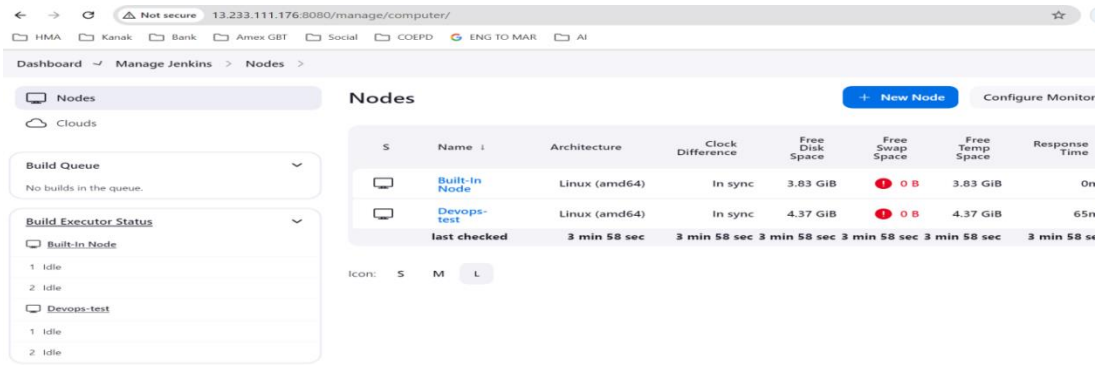


- Agent successfully connected.





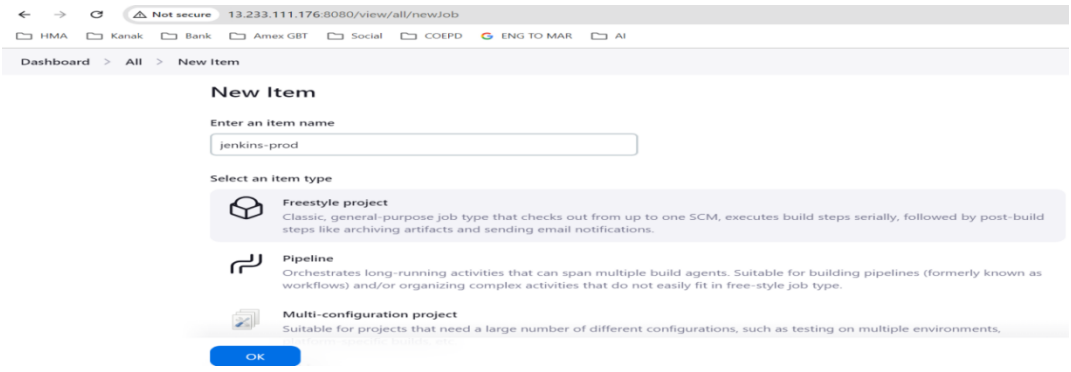
- Now you can see on the dashboard devops-slave in build executor.



- **Create a workspace in Jenkins Slave Node using Jenkins Free-style project.**

a) Create New Job :-

- On the Jenkins dashboard, click **New Item**.
- Enter a name for your project and select **Freestyle project**.
- Click **OK**.



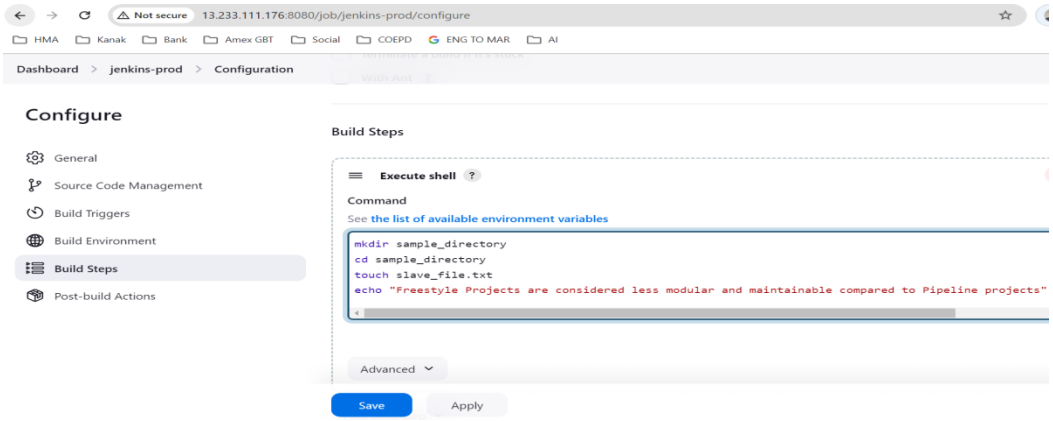
b) Configure the job :-

- **General** : Add a description if needed.
- Scroll down to "**Restrict where this project can be run**" field, enter the label of the salve node you configured.

c) Build section :-

- Scroll down to Build and click Add build step.
- Execute shell and add command as below…
- Mkdir sample_directory

- Cd sample_directory
- Touch slave_file.txt
- Echo “Freestyle projects are considered less modular and maintainable compared to pipeline projects ”> slave_file.txt
- Save and run



- Click build now to run the job.