

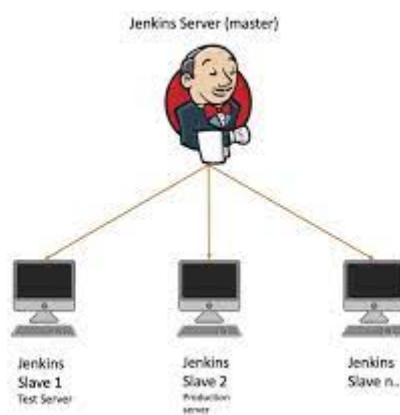
01) What is Jenkins used for?

It is used to implement CI/CD workflows, called pipelines. Pipelines automate testing and reporting on isolated changes in a larger code base in real time and facilitates the integration of disparate branches of the code into a main branch. They also rapidly detect defects in a code base, build the software, automate test of their builds, prepare the code base for deployment (delivery), and ultimately deploy code to containers and virtual machines, as well as bare metal and cloud servers

02) What is Jenkins agent? What is Jenkins executor (Build Executor)?

- An agent is typically a machine, or container, which connects to a Jenkins controller and executes tasks when directed by the controller.
- A Jenkins executor is **one of the basic building blocks which allow a build to run on a node/agent** (e.g. build server). Think of an executor as a single "process ID", or as the basic unit of resource that Jenkins executes on your machine to run a build.

03) Explain Jenkins master-slave architecture?



Master

The main Jenkins Server is the Master Server of Jenkins. This acts as a control server that arranges the defined workflow of the pipeline. The jobs of this Master are as follows:

- *scheduling jobs*
- *sending builds to slaves to execute the job*
- *keeping track of the slaves states (online/offline)*
- *can also directly execute build jobs*

Slave-

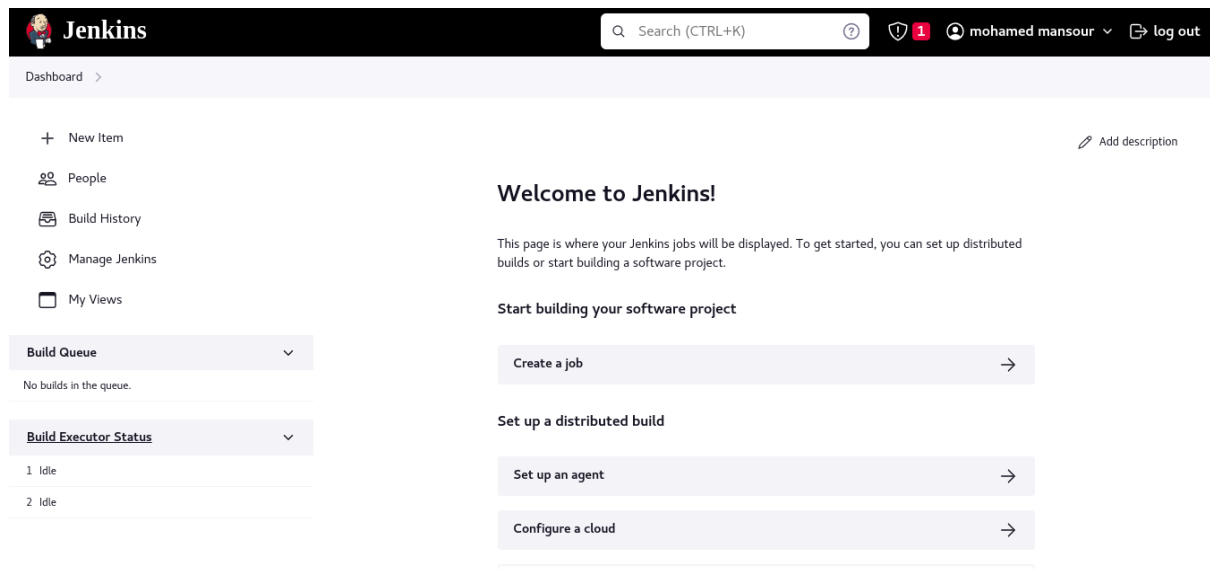
The slave is a part of the Jenkins environment that runs on a remote environment. The characteristics of slaves include:

- *it listens to the Master instance*
- *it's job is to do as they are told to, that includes executing build jobs conveyed by the Master*

04) Install jenkins with docker image.

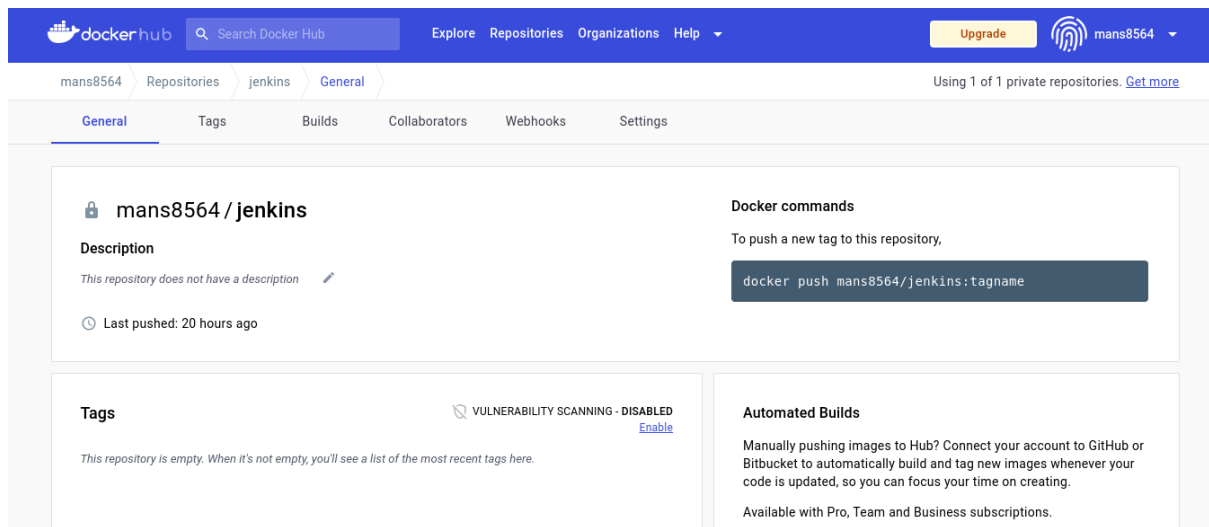
```
[mmansour@localhost ~]$ sudo docker run -p 8080:8080 -p 50000:50000 -d \
> -v jenkins_home:/var/jenkins_home \
> -v /var/run/docker.sock:/var/run/docker.sock \
> -v $(which docker):/usr/bin/docker jenkins/jenkins:lts
Unable to find image 'jenkins/jenkins:lts' locally
lts: Pulling from jenkins/jenkins
```

```
[root@localhost mmansour]# docker ps
CONTAINER ID   IMAGE                COMMAND                  CREATED        STATUS        PORTS
15e6f279d8d7   jenkins/jenkins:lts  "/usr/bin/tini -- /u..."  4 minutes ago  Up           0.0.0.0:8080->8080/tcp, :::8080->8080/tcp, 0.0.0.0:50000->50000/tcp, :::50000->50000/tcp
awesome cerf
```



The screenshot shows the Jenkins web interface. At the top is a navigation bar with the Jenkins logo, a search bar, and user information (mohamed mansour). Below the navigation bar is a sidebar with links to 'New Item', 'People', 'Build History', 'Manage Jenkins', and 'My Views'. The main content area displays a 'Welcome to Jenkins!' message, explaining that this is where jobs are displayed and providing instructions on how to get started. It includes two primary action buttons: 'Create a job' and 'Set up a distributed build'. Under 'Set up a distributed build', there are two sub-options: 'Set up an agent' and 'Configure a cloud'. The 'Build Queue' section on the left indicates 'No builds in the queue.' and the 'Build Executor Status' section shows two executors in an 'Idle' state.

05) Create free style project and link it to private git repo containing any dockerfile then build an image from this dockerfile and push it to private docker repo



The screenshot shows the Docker Hub interface for a repository named 'mans8564/jenkins'. The top navigation bar includes the Docker Hub logo, a search bar, and links to Explore, Repositories, Organizations, and Help. The user's profile 'mans8564' is visible in the top right. The repository page has tabs for General, Tags, Builds, Collaborators, Webhooks, and Settings. The 'General' tab is active, showing the repository name, a description (which is empty), and the last push time (20 hours ago). A 'Docker commands' section provides a command to push a new tag: 'docker push mans8564/jenkins:tagname'. A 'Tags' section indicates that the repository is empty and that vulnerability scanning is disabled. An 'Automated Builds' section explains how to connect the repository to GitHub or Bitbucket for automatic builds.

mans8564/jenkins

Description

This repository does not have a description

Last pushed: 20 hours ago

Docker commands

To push a new tag to this repository,

```
docker push mans8564/jenkins:tagname
```

Tags

VULNERABILITY SCANNING - DISABLED

This repository is empty. When it's not empty, you'll see a list of the most recent tags here.

Automated Builds

Manually pushing images to Hub? Connect your account to GitHub or Bitbucket to automatically build and tag new images whenever your code is updated, so you can focus your time on creating.

Available with Pro, Team and Business subscriptions.



The screenshot shows the 'Add Repository' dialog in Jenkins. The dialog is titled 'Git' and has a 'Repositories' section. It contains a 'Repository URL' field with the value 'https://github.com/78mans/private-jenkins.git', a 'Credentials' dropdown menu with the value '78mans/*****', and an 'Add' button. There is also an 'Advanced...' button and an 'Add Repository' button at the bottom.

Git

Repositories

Repository URL

https://github.com/78mans/private-jenkins.git

Credentials

78mans/*****

+ Add

Advanced...

Add Repository

Bindings

≡ Username and password (separated) ?



Username Variable ?

user

Password Variable ?

pass

Credentials ?

☒ Specific credentials ☐ Parameter expression

mans8564/*****



+ Add

Add

Build Steps

≡ Execute shell ?



Command

See [the list of available environment variables](#)

```
docker build -t mans8564/jenkins:v1 .  
docker login -u $user -p $pass  
docker push mans8564/jenkins:v1
```

Advanced...

Tags

VULNERABILITY SCANNING - DISABLED [Enable](#)

This repository contains 1 tag(s).

Tag	OS	Type	Pulled	Pushed
v1		Image	---	a few seconds ago

[See all](#)

[Go to Advanced Image Management](#)

Automated Builds

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Available with Pro, Team and Business subscriptions.

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