

# **Jenkins Lab 1**

## **01) What is Jenkins used for?**

>> Jenkins is an open-source continuous integration/continuous delivery and deployment (CI/CD) automation software DevOps tool written in the Java programming language. It is used to implement CI/CD workflows, called pipelines.

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

>> 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.

>> Jenkins agent is typically a machine, or container, which connects to a Jenkins controller and executes tasks when directed by the controller. Artifact. An immutable file generated during a Build or Pipeline run which is archived onto the Jenkins Controller for later retrieval by users.

## **03) Explain Jenkins master-slave architecture?**

### **a) Jenkins Master**

Your main Jenkins server is the Master. The Master's job is to handle:

- Scheduling build jobs.
- Dispatching builds to the slaves for the actual execution.
- Monitor the slaves (possibly taking them online and offline as required).
- Recording and presenting the build results.
- A Master instance of Jenkins can also execute build jobs directly.

### **b) Jenkins Slave**

A Slave is a Java executable that runs on a remote machine. Following are the characteristics of Jenkins Slaves:

- It hears requests from the Jenkins Master instance.
- Slaves can run on a variety of operating systems.
- The job of a Slave is to do as they are told to, which involves executing build jobs dispatched by the Master.

- You can configure a project to always run on a particular Slave machine or a particular type of Slave machine, or simply let Jenkins pick the next available Slave.

## 04) Install Jenkins with docker image.

```
[root@localhost mohamed]# docker run -p 8080:8080 -p 50000:50000 -d -v jenkins_home:/var/jenkins_home jenkins/jenkins:lts
Unable to find image 'jenkins/jenkins:lts' locally
lts: Pulling from jenkins/jenkins
bbef03cd1f: Pull complete
398a127e9b8f: Pull complete
740ae8bf5abb: Pull complete
5b55a2898e5d: Pull complete
11d78b95ea0e: Pull complete
725cf6a496a4: Downloading [=====] 66.88MB/94.94MB
acc71bc946ba: Download complete
aeb3c582524d: Download complete
6ba52cfaad0b: Downloading [=====] 30.73MB/76.93MB
4d90a31f0368: Download complete
38d0248b6a15: Download complete 725cf6a496a4: Pull complete
acc71bc946ba: Pull complete
aeb3c582524d: Pull complete
6ba52cfaad0b: Pull complete
4d90a31f0368: Pull complete
38d0248b6a15: Pull complete
e148037a0095: Pull complete
3a72a5e34c1b: Pull complete
Digest: sha256:6bb55cab3759b203fe5e1cac5fd2eff912d0cd572d8aaf1bell16d70b2e7fd244
Status: Downloaded newer image for jenkins/jenkins:lts
e59e08e8a0be13c024f157d7403af1ef370056055f05f2abe34ecd6ff810fcb
[root@localhost mohamed]#
[root@localhost mohamed]# docker ps -a
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS
e59e08e8a0be       jenkins/jenkins:lts  "/usr/bin/tini -- /u..."  36 minutes ago      Up 36 minutes      0.0.0.0:8080->8080/tcp, :::8080->8080/tcp, 0.0.0.0:50000->50000/tcp, :::50000->50000/tcp
sleepy_gates
```

The screenshot shows the Jenkins Dashboard interface. On the left, there is a sidebar with navigation links: New Item, People, Build History, Manage Jenkins, and My Views. The main area displays the 'Build Queue' and 'Build Executor Status' sections. The 'Build Queue' section shows 'No builds in the queue.' The 'Build Executor Status' section shows two executors, both in 'Idle' state. Below these, there is a table of build history.

S	W	Name	Last Success	Last Failure	Last Duration
✖	☁	my-first-trial	2 hr 2 min #3	1 hr 52 min #4	54 ms

At the bottom of the table, there is an 'Icon legend' and three Atom feed links: 'Atom feed for all', 'Atom feed for failures', and 'Atom feed for just latest builds'.

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

## Configure

General

Source Code Management

Build Triggers

Build Environment

Build Steps

Post-build Actions

☐ None

☒ Git ?

Repositories ?

Repository URL ?

https://github.com/swelams/jenkins-demo

Credentials ?

- none -

+ Add

Advanced...

## Build Steps


Execute shell ?

Command

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


```
docker build -t mohamedsaaeed/jenkins-images:1 .  
docker login -u $USER -p $PASSWORD  
docker push mohamedsaaeed/jenkins-images:1
```

Advanced...

 docker hub

[Explore](#) [Repositories](#) [Organizations](#) [Help](#)

[Upgrade](#)

 mohamedsaaeed

mohamedsaaeed

Repositories

jenkins-images

General

Using 1 of 1 private repositories. [Get more](#)

General


Tags

Builds

Collaborators

Webhooks

Settings

 mohamedsaaeed / jenkins-images

Description

This repository does not have a description

Last pushed: a few seconds ago

Docker commands

To push a new tag to this repository,

```
docker push mohamedsaaeed/jenkins-images:tagname
```

Tags

VULNERABILITY SCANNING - DISABLED [Enable](#)

Automated Builds

The push refers to repository [docker.io/mohamedsaaeed/jenkins-images]

a5962e2283d8: Preparing

6b5aaff44254: Preparing

53a0b163e995: Preparing

b626401ef603: Preparing

9b55156abf26: Preparing

293d5db30c9f: Preparing

03127cdb479b: Preparing

9c742cd6c7a5: Preparing

293d5db30c9f: Waiting

03127cdb479b: Waiting

9c742cd6c7a5: Waiting

6b5aaff44254: Mounted from library/openjdk

b626401ef603: Mounted from library/openjdk

53a0b163e995: Mounted from library/openjdk

9b55156abf26: Mounted from library/openjdk

a5962e2283d8: Pushed

293d5db30c9f: Mounted from library/openjdk

03127cdb479b: Mounted from library/openjdk

9c742cd6c7a5: Mounted from library/openjdk

1: digest: sha256:91eb8e5d4dea8c169738304af0fc756d3e218903e1373a8e5a2d0a23d63a7886 size: 2003

Finished: SUCCESS