

1- Configure Jenkins image to run docker commands on your host docker daemon.

```
abdelrahman@abdelrahman-HP-EliteBook-745-G3:~$ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED            STATUS              PORTS
78b64f461f78        cec2651c412d      "/sbin/tini -- /usr..."   31 hours ago       Up 26 minutes    50000/tcp, 0.0.0.0:900
0->8080/tcp, ::900->8080/tcp
47472a1a1b2a        jenkins/jenkins:lts  "/sbin/tini -- /usr..."   2 days ago        Up 24 minutes    50000/tcp, 0.0.0.0:90-
>8080/tcp, ::90->8080/tcp
infallible_meitner
abdelrahman@abdelrahman-HP-EliteBook-745-G3:~$ docker exec -it 78b64f461f78 bash
root@78b64f461f78:/# docker --version
Docker version 20.10.10, build b485636
root@78b64f461f78:/#
```

2- Create CI/CD for this repo https://github.com/mahmoud254/jenkins_nodejs_example.git

```
1 * pipeline {
2     agent any
3
4     stages {
5         stage('preparation') {
6             steps {
7                 // Get some code from a Github repository
8                 git 'https://github.com/mahmoud254/jenkins_nodejs_example.git'
9             }
10        }
11        stage('CI') {
12            steps {
13                withCredentials([usernamePassword(credentialsId: 'dockerhub', passwordVariable: 'password', usernameVariable: 'username')])
14                    sh """
15                        docker build . -f dockerfile -t abdelrahmanzaki179/docker_with_jenkins_ex:latest
16                        docker login -u ${username} -p ${password}
17                        docker push abdelrahmanzaki179/docker_with_jenkins_ex:latest
18                    """
19            }
20        }
21    }
22}
```

Use Groovy Sandbox

[Pipeline Syntax](#)

[Save](#) [Apply](#)

```
Started by user admin
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/jenkins_home/workspace/docker-pipeline
[Pipeline] {
[Pipeline] stage
[Pipeline] { (preparation)
[Pipeline] git
The recommended git tool is: NONE
No credentials specified
Cloning the remote Git repository
Cloning repository https://github.com/mahmoud254/jenkins_nodejs_example.git
> git init /var/jenkins_home/workspace/docker-pipeline # timeout=10
Fetching upstream changes from https://github.com/mahmoud254/jenkins_nodejs_example.git
> git --version # timeout=10
> git --version # 'git' version 2.30.2'
> git fetch --tags --force --progress -- https://github.com/mahmoud254/jenkins_nodejs_example.git
+refs/heads/*:refs/remotes/origin/* # timeout=10
> git config remote.origin.url https://github.com/mahmoud254/jenkins_nodejs_example.git # timeout=10
> git config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10
Avoid second fetch
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10
Checking out Revision 8b23b90d16627ba5bea48bfa8d920121ea75ff87 (refs/remotes/origin/master)
> git config core.sparsecheckout # timeout=10
> git checkout -f 8b23b90d16627ba5bea48bfa8d920121ea75ff87 # timeout=10
> git branch -a -v --no-abbrev # timeout=10
> git checkout -b master 8b23b90d16627ba5bea48bfa8d920121ea75ff87 # timeout=10
Commit message: "Delete Jenkinsfile"
First time build. Skipping changelog.
[Pipeline] }
```

```

6f7f3f280040: Preparing
d6e0d602719c: Preparing
73c3e7ef7bc6: Preparing
f1486e967e48: Waiting
5750262417ad: Waiting
9ed3c35b4335: Waiting
6f7f3f280040: Waiting
d6e0d602719c: Waiting
73c3e7ef7bc6: Waiting
bb1bb031ad58: Mounted from library/node
f9f80a3f0f8f: Mounted from library/node
b8890c63f8f5: Mounted from library/node
2301f40c12fa: Pushed
5750262417ad: Mounted from library/node
f1486e967e48: Mounted from library/node
9ed3c35b4335: Mounted from library/node
6f7f3f280040: Mounted from library/node
d6e0d602719c: Mounted from library/node
73c3e7ef7bc6: Mounted from library/node
95b175045883: Pushed
latest: digest: sha256:f68ee0d1abcc6e05c2243b9209259acc720904d592424783e8b21132feecd7a6 size: 2633
[Pipeline]
[Pipeline] // withCredentials
[Pipeline]
[Pipeline] // stage
[Pipeline]
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS

```

abdelrahmanzaki179 [Edit profile](#)

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Displaying 2 of 2 repositories


abdelrahmanzaki179/docker_with_jenkins_ex
 By [abdelrahmanzaki179](#) • Updated a minute ago

Container

 4 0
 Downloads Stars
[Back to Dashboard](#)[Status](#)[Changes](#)[Build Now](#)[Configure](#)[Delete Pipeline](#)[Full Stage View](#)[Rename](#)[Pipeline Syntax](#)[Build History](#) [trend](#)

Find	X
------	---

② #2	Nov 12, 2021, 3:57 PM
------	-----------------------

① #1	Nov 12, 2021, 3:47 PM
------	-----------------------

Pipeline docker-pipeline

[add description](#)[Disable Project](#)

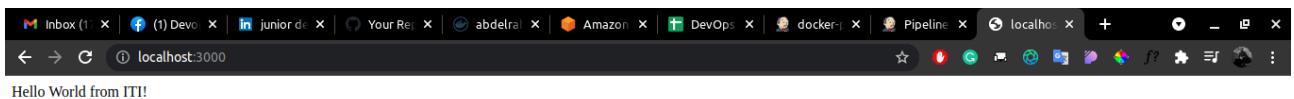
Recent Changes

Stage View

Average stage times: (Average full run time: ~1min 42s)		
preparation	CI	CD
3s	1min 32s	3s
Nov 12 17:57 No Changes	1s	8s

#2	Nov 12 17:57 No Changes	6s	2min 55s
#1	Nov 12 17:47 No Changes		

Permalinks



3- Create docker file to build image for Jenkins slave.

Sol : <https://github.com/abdelrahman179/DevOps/blob/Jenkins/JKS/Dockerfile>

4- Create container from this image and configure ssh.

```
abdelrahman@abdelrahman-HP-EliteBook-745-G3:~$ docker images
REPOSITORY          TAG      IMAGE ID      CREATED       SIZE
<none>            <none>   0ee0fecc9891   6 minutes ago  633MB
abdelrahmanzaki179/docker_with_jenkins_ex    latest    b348349d8715   2 hours ago   921MB
<none>            <none>   cec2651c412d   32 hours ago  1.02GB
jenkins/jenkins     lts     2219cea3096b   8 days ago    441MB
node                12      9f5f1136afe0   2 weeks ago   918MB
ubuntu              latest   ba6accce2d29   3 weeks ago   72.8MB
gcr.io/k8s-minikube/kicbase      v0.0.27  9falcc16ad6d   8 weeks ago   1.08GB
abdelrahman@abdelrahman-HP-EliteBook-745-G3:~$
```

```
abdelrahman@abdelrahman-HP-EliteBook-745-G3:~$ docker ps -a
CONTAINER ID   IMAGE           NAMES          COMMAND        CREATED       STATUS        PORTS
9d5478e4c01c   0ee0fecc9891   focused_goodall   "bash"        3 minutes ago  Exited (0) 52 seconds ago
1f1043321c86   abdelrahmanzaki179/docker_with_jenkins_ex:latest  "docker-entrypoint.s..."  2 hours ago   Up 2 hours   0.0.0.0:3000->3000/tcp, ::1
78b64f461f78   cec2651c412d   goofy_lewin      "/sbin/tini -- /usr/..."  32 hours ago  Up 2 hours   50000/tcp, 0.0.0.0:9000->8080/tcp, ::1
0:9000->8080/tcp
47472a1ab2a   jenkins/jenkins:lts  "sbin/tini -- /usr/..."  2 days ago   Up 2 hours   50000/tcp, 0.0.0.0:90->8080/tcp, ::1
0/tcp, ::1
abdelrahman@abdelrahman-HP-EliteBook-745-G3:~$
```

```
root@f51c311bbb73:/# apt install openjdk-8-jdk
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
```

```
root@f51c311bbb73:/# service ssh start
 * Starting OpenBSD Secure Shell server sshd
root@f51c311bbb73:/# service ssh status
 * sshd is running
root@f51c311bbb73:/# mkdir ~/.ssh
root@f51c311bbb73:/# cd ~/.ssh/
root@f51c311bbb73:~/ssh# apt install vim
```

5- From Jenkins master create new node with the slave container.

localhost:8081/computer/docker_slave/configure

Nodes > docker_slave

Name: docker_slave

Description:

Number of executors: 1

Remote root directory: /jenkins_home

Labels: docker_slave

Save

Dashboard > Nodes > docker_slave

Usage: Only build jobs with label expressions matching this node

Launch method: Launch agents via SSH

Host: 172.17.0.4

Credentials: root

Host Key Verification Strategy: Non verifying Verification Strategy

Save

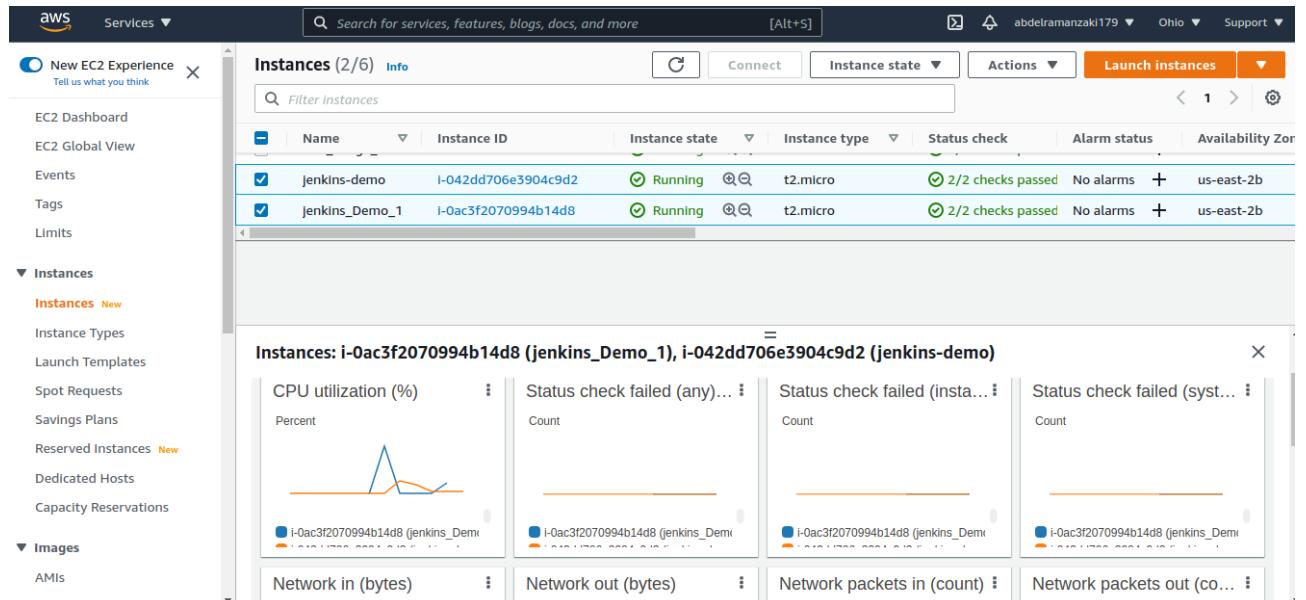
Dashboard > Nodes > docker_slave

```
[10/17/21 23:23:34] [SSH] Checking java version of java
[10/17/21 23:23:35] [SSH] java -version returned 1.8.0_292.
[10/17/21 23:23:35] [SSH] Starting sftp client.
[10/17/21 23:23:35] [SSH] Copying latest remoting.jar...
[10/17/21 23:23:35] [SSH] Copied 1,507,326 bytes.
Expanded the channel window size to 4MB
[10/17/21 23:23:35] [SSH] Starting agent process: cd "/jenkins_home" && java -jar
remoting.jar -workDir /jenkins_home -jar-cache /jenkins_home/remoting/jarCache
Oct 17, 2021 11:23:39 PM org.jenkinsci.remoting.engine.WorkDirManager initializeWorkDir
INFO: Using /jenkins_home/remoting as a remoting work directory
Oct 17, 2021 11:23:39 PM org.jenkinsci.remoting.engine.WorkDirManager setupLogging
INFO: Both error and output logs will be printed to /jenkins_home/remoting
<===[JENKINS REMOTING CAPACITY]==>channel started
Remoting version: 4.10
This is a Unix agent
Evacuated stdout
Agent successfully connected and online
...
```

	docker_slave	Linux (amd64)	In sync	76.98 GB	1.43
	master	Linux (amd64)	In sync	76.98 GB	1.43
Data obtained	1 min 21 sec	1 min 21 sec	1 min 22 sec	1 min 21 sec	

Refresh status

6- Create 2 AWS ec2's



The screenshot shows the AWS EC2 Instances page with the following details:

- Instances (2/6)**: Two instances are listed:
 - jenkins-demo**: Instance ID i-042dd706e3904c9d2, Status: Running, Type: t2.micro, Status check: 2/2 checks passed, No alarms, Availability Zone: us-east-2b.
 - jenkins_Demo_1**: Instance ID i-0ac3f2070994b14d8, Status: Running, Type: t2.micro, Status check: 2/2 checks passed, No alarms, Availability Zone: us-east-2b.
- Metrics Overview**: A detailed view for the selected instances (i-0ac3f2070994b14d8 and i-042dd706e3904c9d2) showing metrics like CPU utilization, Status check failed, and Network traffic over time.

```
File Edit View Search Terminal Tabs Help
ubuntu@ip-172-31-25-102:... × ubuntu@ip-172-31-22-155:~ × abdelrahman@abdelrahma... × +
```

```
rename      Rename a container
restart     Restart one or more containers
rm          Remove one or more containers
rmi         Remove one or more images
run          Run a command in a new container
save         Save one or more images to a tar archive (streamed to STDOUT by default)
search       Search the Docker Hub for images
start        Start one or more stopped containers
stats        Display a live stream of container(s) resource usage statistics
stop         Stop one or more running containers
tag          Create a tag TARGET_IMAGE that refers to SOURCE_IMAGE
top          Display the running processes of a container
unpause      Unpause all processes within one or more containers
update       Update configuration of one or more containers
version      Show the Docker version information
wait         Block until one or more containers stop, then print their exit codes

Run 'docker COMMAND --help' for more information on a command.

To get more help with docker, check out our guides at https://docs.docker.com/go/guides/
ubuntu@ip-172-31-25-102:~$ ls
jenkins
ubuntu@ip-172-31-25-102:~$ cd jenkins/
ubuntu@ip-172-31-25-102:~/jenkins$ ls
caches  remoting  remoting.jar  workspace
ubuntu@ip-172-31-25-102:~/jenkins$
```

```
File Edit View Search Terminal Tabs Help
ubuntu@ip-172-31-25-102:... × ubuntu@ip-172-31-22-155:~ × abdelrahman@abdelrahma... × +
```

```
* Support:      https://ubuntu.com/advantage

System information as of Sat Nov 13 19:19:54 UTC 2021

System load:  0.07          Processes:           113
Usage of /:   49.2% of 7.69GB  Users logged in:      0
Memory usage: 40%            IPv4 address for docker0: 172.17.0.1
Swap usage:   0%              IPv4 address for eth0:   172.31.22.155

* Ubuntu Pro delivers the most comprehensive open source security and
  compliance features.

  https://ubuntu.com/aws/pro

11 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

*** System restart required ***
Last login: Fri Nov 12 16:12:37 2021 from 197.37.206.181
ubuntu@ip-172-31-22-155:~$ ls
jenkins
ubuntu@ip-172-31-22-155:~$ cd jenkins/
ubuntu@ip-172-31-22-155:~/jenkins$ ls
caches  remoting  remoting.jar  workspace
ubuntu@ip-172-31-22-155:~/jenkins$
```

7- Configure them to work as Jenkins slaves

[Dashboard](#) > [Nodes](#)

[Back to Dashboard](#)

[Manage Jenkins](#)

[New Node](#)

[Configure Clouds](#)

[Node Monitoring](#)

Build Queue

No builds in the queue.

Build Executor Status

master	AWS
1 Idle	2 Idle

[Refresh status](#)

[Dashboard](#) > [Nodes](#) > [AWS_2](#)

[Delete Agent](#)

[Configure](#)

[Build History](#)

[Load Statistics](#)

[Script Console](#)

[Log](#)

[System Information](#)

[Disconnect](#)

Build Executor Status

AWS_2
1 Idle

Number of executors

1

Remote root directory

/home/ubuntu/jenkins

Labels

AWS_2

Usage

Only build jobs with label expressions matching this node

Launch method

Launch agents via SSH

Host

3.131.35.107

Credentials

ubuntu

[Save](#)

[Dashboard](#) > [Nodes](#) > [AWS_2](#)

Build Executor Status

AWS_2
1 Idle

Launch method

Launch agents via SSH

Host

3.131.35.107

Credentials

ubuntu

[Add](#)

Host Key Verification Strategy

Non verifying Verification Strategy

[Advanced...](#)

Availability

Keep this agent online as much as possible

Node Properties

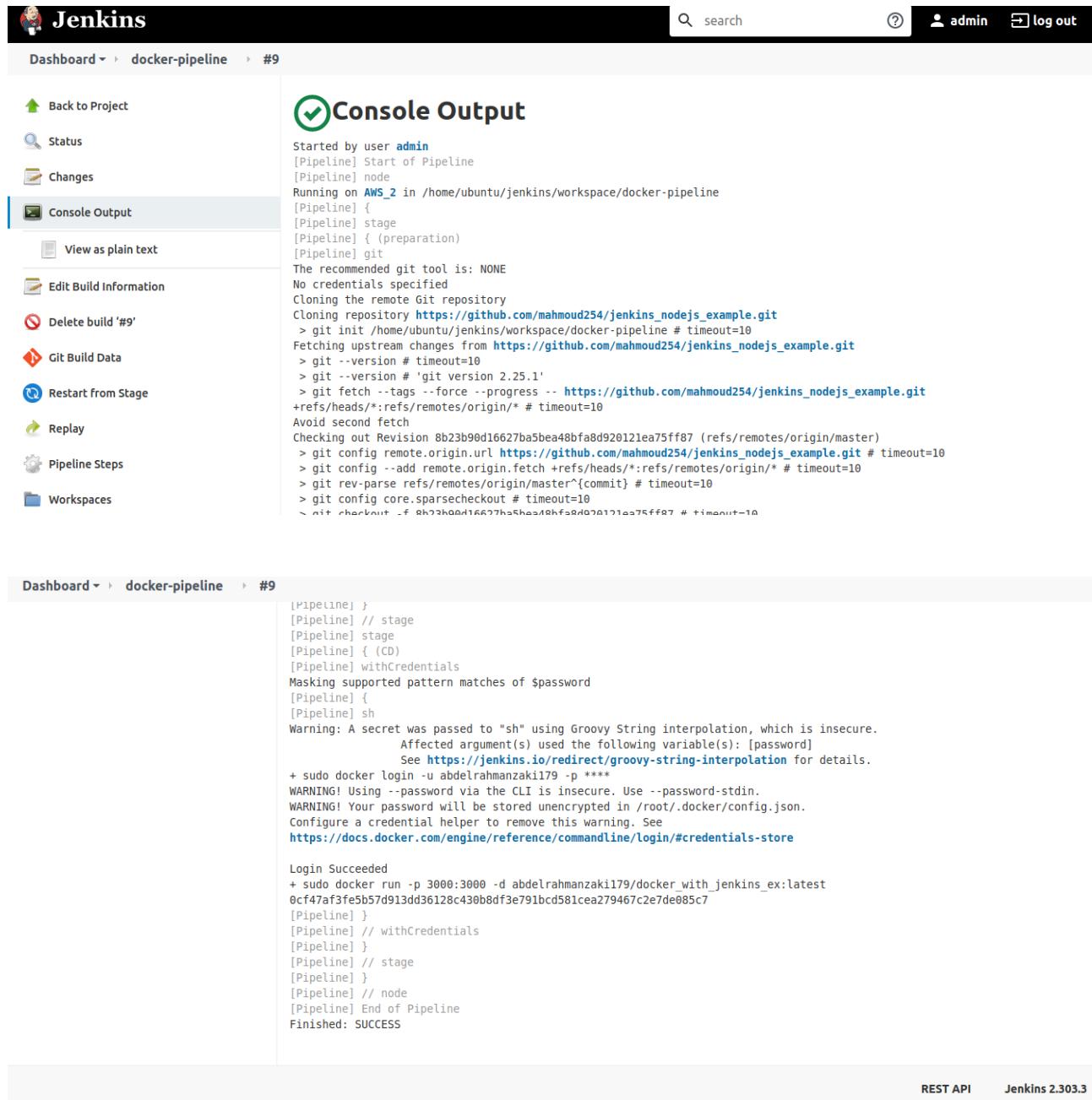
Disable deferred wipeout on this node

Environment variables

Tool Locations

[Save](#)

8- Configure them in nodes section in Jenkins



The screenshot shows two Jenkins pages side-by-side. The left page displays the 'Console Output' for a build named 'docker-pipeline #9'. The right page displays the full build log for the same build.

Console Output (Left):

```
Started by user admin
[Pipeline] Start of Pipeline
[Pipeline] node
Running on AWS_2 in /home/ubuntu/jenkins/workspace/docker-pipeline
[Pipeline] {
[Pipeline] stage
[Pipeline] { (preparation)
[Pipeline] git
The recommended git tool is: NONE
No credentials specified
Cloning repository https://github.com/mahmoud254/jenkins_nodejs_example.git
> git init /home/ubuntu/jenkins/workspace/docker-pipeline # timeout=10
Fetching upstream changes from https://github.com/mahmoud254/jenkins_nodejs_example.git
> git --version # timeout=10
> git --version # 'git version 2.25.1'
> git fetch --tags --force --progress -- https://github.com/mahmoud254/jenkins_nodejs_example.git
+refs/heads/*:refs/remotes/origin/*
> git config core.sparsecheckout # timeout=10
> git checkout -f 8b23b90d16627ba5bea48bfa8d920121ea75ff87 (refs/remotes/origin/master)
> git config remote.origin.url https://github.com/mahmoud254/jenkins_nodejs_example.git # timeout=10
> git config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/*
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10
> git config core.sparsecheckout # timeout=10
> git checkout -f 8b23b90d16627ba5bea48bfa8d920121ea75ff87 # timeout=10
Avoid second fetch
Checking out Revision 8b23b90d16627ba5bea48bfa8d920121ea75ff87 (refs/remotes/origin/master)
> git config remote.origin.url https://github.com/mahmoud254/jenkins_nodejs_example.git # timeout=10
> git config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/*
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10
> git config core.sparsecheckout # timeout=10
> git checkout -f 8b23b90d16627ba5bea48bfa8d920121ea75ff87 # timeout=10
```

Build Log (Right):

```
[Pipeline]
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (CD)
[Pipeline] withCredentials
Masking supported pattern matches of $password
[Pipeline] {
[Pipeline] sh
Warning: A secret was passed to "sh" using Groovy String interpolation, which is insecure.
Affected argument(s) used the following variable(s): [password]
See https://jenkins.io/redirect/groovy-string-interpolation for details.
+ sudo docker login -u abdelrahmanzaki179 -p ****
WARNING! Using --password via the CLI is insecure. Use --password-stdin.
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
+ sudo docker run -p 3000:3000 -d abdelrahmanzaki179/docker_with_jenkins_ex:latest
0cf47af5fe5b57d913dd36128c430b8df3e791bcd581cea279467c2e7de085c7
[Pipeline]
[Pipeline] // withCredentials
[Pipeline]
[Pipeline] // stage
[Pipeline]
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

REST API Jenkins 2.303.3