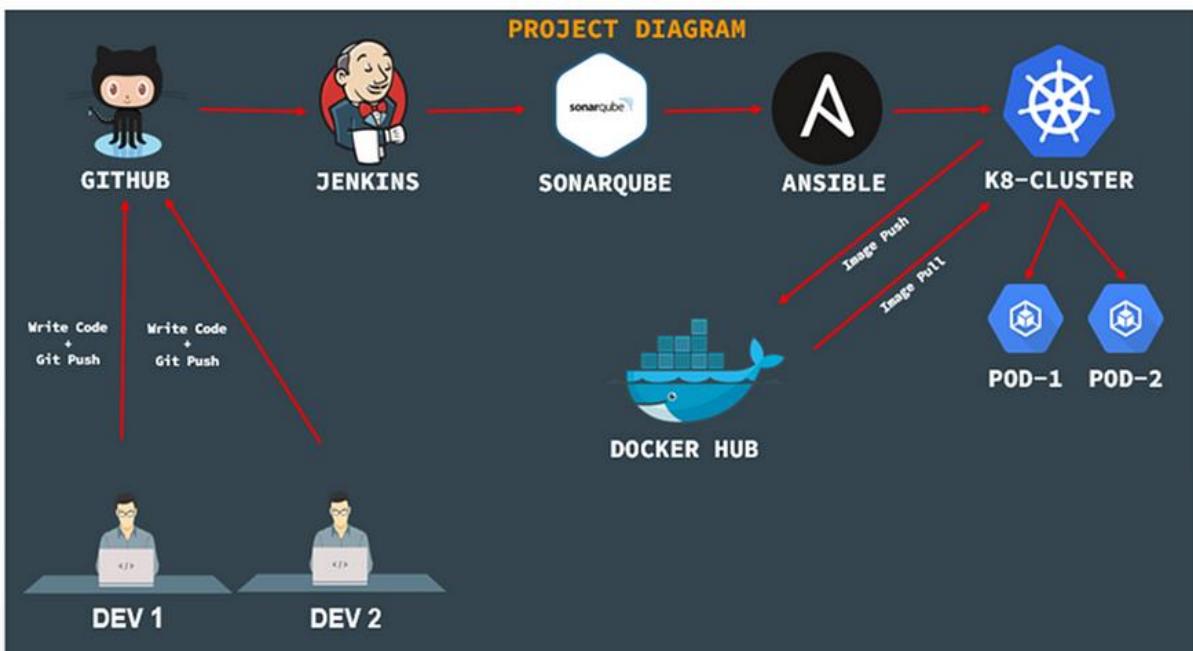


DEVOPS_REAL_TIME_PROJECT

enkins Pipeline for java base web application using Maven, SonarQube, Ansible and (EKS) Kubernetes



The project involves building and deploying a Java application using a CI/CD pipeline. Here are the steps involved:

Version Control: The code is stored in a version control system such as Git, and hosted on GitHub. The code is organized into branches such as the main or development branch.

Continuous Integration: Jenkins is used as the CI server to build the application. Whenever there is a new code commit, Jenkins automatically pulls the code from GitHub, builds it using Maven, and runs automated tests. If the tests fail, the build is marked as failed and the team is notified.

Code Quality: SonarQube is used to analyse the code and report on code quality issues such as bugs, vulnerabilities, and code smells. The SonarQube analysis is triggered as part of the Jenkins build pipeline.

Containerization: Docker is used to containerizing the Java application. The Docker file is stored in the Git repository along with the source code. The Docker file specifies the environment and dependencies required to run the application.

Container Registry: The Docker image is pushed to Docker Hub, a public or private Docker registry. The Docker image can be versioned and tagged for easy identification.

Continuous Deployment: Webhooks is used to automate the deployment of the containerized application to Kubernetes. Whenever a new version of the application image is pushed to the Git repository, Webhook will automatically deploy it to the Kubernetes cluster.

Overall, this project demonstrates how to integrate various tools commonly used in software development to streamline the development process, improve code quality, and automate deployment

Configure all below pre-requisites for project.

- 1. Install Jenkins & Ansible & Maven**

2. Install Sonarqube

3. Install Kubernetes Cluster

4. Git Account

5. Dockerhub Account

@@ Install Jenkins & Ansible & Maven @@

***** JENKINS INSTALLATION *****

Pre-Requisites

Jenkins -Ansible Server Details:

Operating System : Ubuntu

Hostname : jenkins-ansible

RAM : 2 GB

CPU : 1 Core

EC2 Instance : t2.small

The screenshot shows the AWS EC2 Instances page. On the left, there's a sidebar with navigation links like EC2 Dashboard, EC2 Global View, Events, Limits, Instances, Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Images, AMIs, and AMI Catalog. The main area displays the instance summary for 'i-09e136fe73f638fc0 (jenkins-ansible)'. The summary includes details such as Instance ID, Public IPv4 address (18.142.136.223), Private IP address (172.31.6.146), Instance state (Pending), VPC ID (vpc-03c1ae9fa1980e9be), and Subnet ID (subnet-039592c2b3270c7d0). Below the summary, there are tabs for Details, Security, Networking, Storage, Status checks, Monitoring, and Tags. A 'Details' tab is currently selected.

Update repository of ubuntu

```
sudo -i
sudo apt-get update
```

The screenshot shows a terminal window with a session titled 'jenkins-ansible'. The terminal output shows the command 'sudo apt-get update' being run, followed by a list of package downloads from the 'ap-southeast-1.ec2.archive.ubuntu.com' repository. The packages include focal, focal-updates, focal-backports, focal-security, focal/universe, focal/multiverse, focal/multiverse amd64, focal-updates/main, focal-updates/universe, focal-updates/restricted, and focal-updates/multiverse. The total download size is approximately 1.4 GB.

Change time zone

```
date
timedatectl
sudo timedatectl set-timezone Asia/Kolkata
```

```
timedatectl  
date
```

```
root@ip-172-31-6-146:~# date  
Fri Jun 2 06:16:46 UTC 2023  
root@ip-172-31-6-146:~# timedatectl  
    Local time: Fri 2023-06-02 06:16:54 UTC  
    Universal time: Fri 2023-06-02 06:16:54 UTC  
        RTC time: Fri 2023-06-02 06:16:54  
      Time zone: Etc/UTC (UTC, +0000)  
System clock synchronized: yes  
          NTP service: active  
    RTC in local TZ: no  
root@ip-172-31-6-146:~# sudo timedatectl set-timezone Asia/Kolkata  
root@ip-172-31-6-146:~# timedatectl  
    Local time: Fri 2023-06-02 11:47:11 IST  
    Universal time: Fri 2023-06-02 06:17:11 UTC  
        RTC time: Fri 2023-06-02 06:17:11  
      Time zone: Asia/Kolkata (IST, +0530)  
System clock synchronized: yes  
          NTP service: active  
    RTC in local TZ: no  
root@ip-172-31-6-146:~# date  
Fri Jun 2 11:47:16 IST 2023  
root@ip-172-31-6-146:~#
```

Change hostname

```
hostname  
hostnamectl set-hostname jenkins-ansible  
bash  
hostname
```

```
root@ip-172-31-6-146:~# hostname  
ip-172-31-6-146  
root@ip-172-31-6-146:~# hostnamectl set-hostname jenkins-ansible  
root@ip-172-31-6-146:~# bash  
root@jenkins-ansible:~# hostname  
jenkins-ansible  
root@jenkins-ansible:~#
```

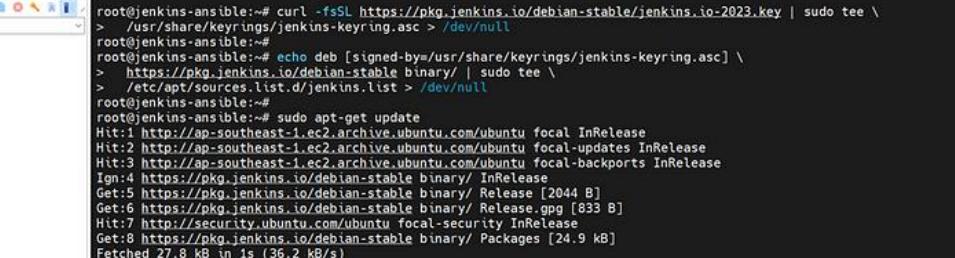
Install Java

```
java -version  
apt-get install openjdk-11-jdk  
java -version
```

```
jenkins-ansible
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
root@jenkins-ansible:~# java -version
openjdk version "11.0.19" 2023-04-18
OpenJDK Runtime Environment (Build 11.0.19+7-post-Ubuntu-0ubuntu120.04.1)
OpenJDK 64-Bit Server VM (build 11.0.19+7-post-Ubuntu-0ubuntu120.04.1, mixed mode, sharing)
root@jenkins-ansible:~#
```

Install Jenkins

```
curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key | sudo tee \
/usr/share/keyrings/jenkins-keyring.asc > /dev/null
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
sudo apt-get update
sudo apt-get install jenkins=2.361.3 -y
```



The screenshot shows a Jenkins Ansible terminal session. The user has run the command to install Jenkins:

```
root@jenkins-ansible:~# curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key | sudo tee \
> /usr/share/keyrings/jenkins-keyring.asc >/dev/null
root@jenkins-ansible:~# 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
root@jenkins-ansible:~# sudo apt-get update
Hit 1 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal InRelease
Hit 2 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit 3 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-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 focal-security InRelease
Get:8 https://pkg.jenkins.io/debian-stable binary/ Packages [24.9 kB]
Fetched 27.8 kB in 1s (36.2 kB/s)
Reading package lists... Done
root@jenkins-ansible:~# sudo apt-get install jenkins=2.361.3 -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  net-tools
The following NEW packages will be installed:
  jenkins net-tools
0 upgraded, 2 newly installed, 0 to remove and 24 not upgraded.
Need to get 93.0 MB of archives.
After this operation, 94.4 MB of additional disk space will be used.
Get:1 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 net-tools amd64 1.60+git20180626.aebd88e-1ubuntu1 [196 kB]
Get:2 https://pkg.jenkins.io/debian-stable binary/ jenkins 2.361.3 [92.8 MB]
Fetched 93.0 MB in 4s (22.4 MB/s)
Selecting previously unselected package net-tools.
(Reading database ... g2314 file and directories currently installed.)
```

Service start

```
systemctl start Jenkins
```

Service enable & check status

```
systemctl enable jenkins  
systemctl status Jenkins
```

```
jenkins-ansible Terminal Sessions View Xserver Tools Games Settings Macros Help Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help [4] jenkins-ansible ~# systemctl start jenkins  
root@jenkins-ansible:~# systemctl enable jenkins  
Synchronizing state of jenkins.service with SysV service script with /lib/systemd/systemd-sysv-install.  
Executing: /lib/systemd/systemd-sysv-install enable jenkins  
root@jenkins-ansible:~# systemctl status jenkins  
● jenkins.service - Jenkins Continuous Integration Server  
   Loaded: loaded (/lib/systemd/system/jenkins.service; enabled; vendor preset: enabled)  
   Active: active (running) since Fri 2023-06-02 11:52:31 IST; 48s ago  
     Main PID: 5656 (java)  
        Tasks: 43 (limit: 2349)  
       Memory: 360.4M  
      CGroup: /system.slice/jenkins.service  
              └─ 5656 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --home=/var/cache/jenkins/war  
  
Jun 02 11:51:55 jenkins-ansible jenkins[5656]: *****  
Jun 02 11:51:55 jenkins-ansible jenkins[5656]: *****  
Jun 02 11:52:31 jenkins-ansible jenkins[5656]: 2023-06-02 06:22:31.335+0000 [id=28] INFO jenkins.InitReactorRunner  
Jun 02 11:52:31 jenkins-ansible jenkins[5656]: 2023-06-02 06:22:31.365+0000 [id=22] INFO hudson.lifecycle.Lifecycle  
Jun 02 11:52:31 jenkins-ansible systemd[1]: Started Jenkins Continuous Integration Server.  
Jun 02 11:52:32 jenkins-ansible jenkins[5656]: 2023-06-02 06:22:32.549+0000 [id=44] INFO h.m.DownloadService$Downl  
Jun 02 11:52:32 jenkins-ansible jenkins[5656]: 2023-06-02 06:22:32.552+0000 [id=44] INFO hudson.util.Retrive#start  
Jun 02 11:52:32 jenkins-ansible jenkins[5656]: 2023-06-02 06:22:32.558+0000 [id=44] INFO hudson.model.AsyncPeriodic  
Jun 02 11:52:36 jenkins-ansible jenkins[5656]: 2023-06-02 06:22:36.234+0000 [id=64] INFO hudson.model.AsyncPeriodic  
Jun 02 11:52:36 jenkins-ansible jenkins[5656]: 2023-06-02 06:22:36.236+0000 [id=64] INFO hudson.model.AsyncPeriodic  
lines 1-19/19 (END)
```

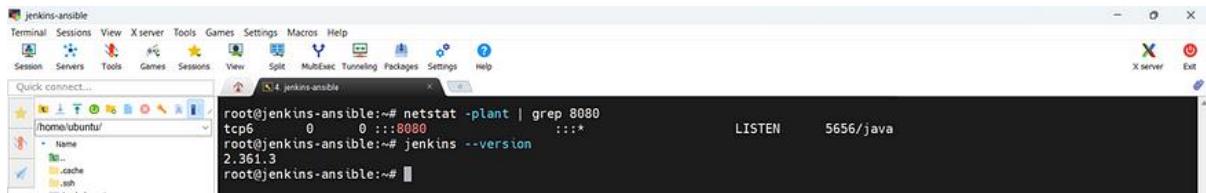
Check 8080 port is used or not

```
netstat -plant | grep 8080
```

```
jenkins-ansible Terminal Sessions View Xserver Tools Games Settings Macros Help Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help [4] jenkins-ansible ~# netstat -plant | grep 8080  
tcp6 0 0 :::8080 ::::* LISTEN 5656/java  
root@jenkins-ansible:~#
```

Check version & Open jenkins on browser

```
jenkins - version
```



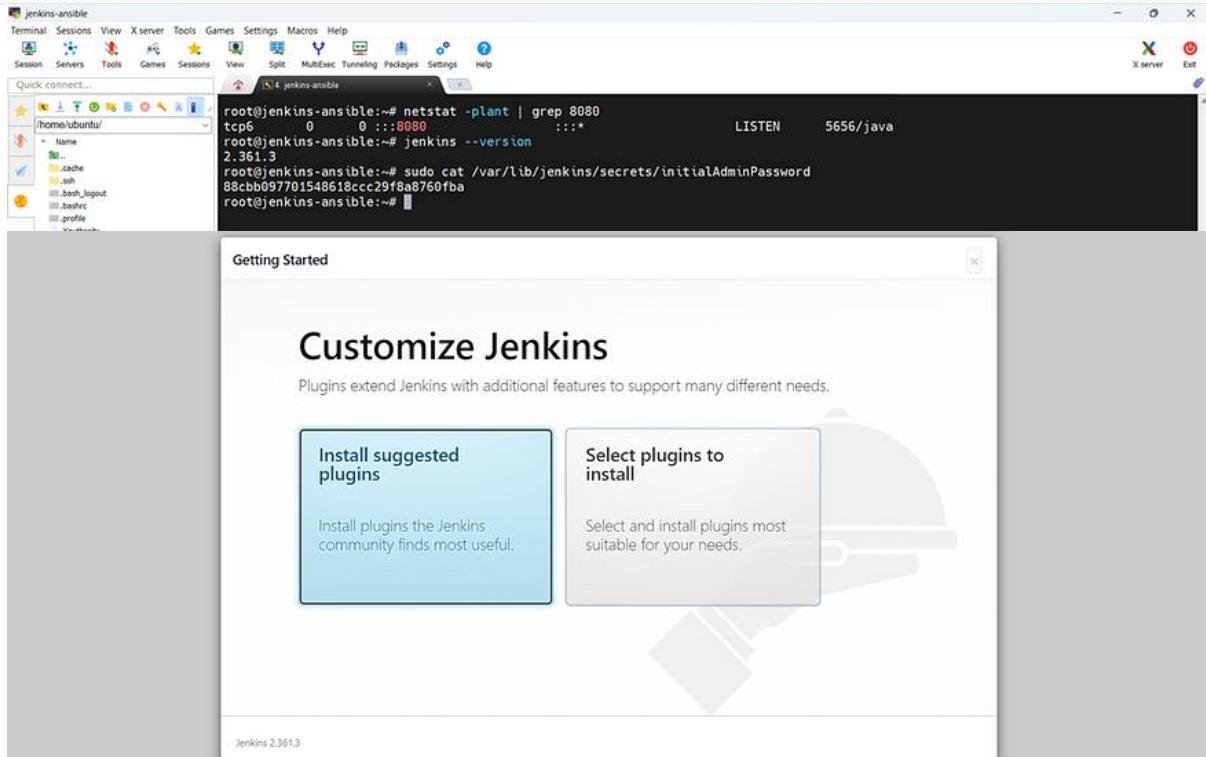
```
root@jenkins-ansible:~# netstat -plant | grep 8080
tcp6       0      0 ::1:8080          ::*        LISTEN      5656/java
root@jenkins-ansible:~# jenkins --version
2.361.3
root@jenkins-ansible:~#
```

URL: http://<jenkins_server_ip>:8080



Get Jenkins Administrator password using this command

```
sudo cat /var/lib/jenkins/secrets/initialAdminPassword
```



The screenshot shows the Jenkins 'Getting Started' page. At the top, there's a navigation bar with links to Gmail, YouTube, Translate, Bard, and Google. Below the navigation bar is a 'Getting Started' card with the title 'Getting Started'. Inside the card, there's a grid of plugin icons and names. The grid is organized into columns: 'Folders' (Timestamper, Pipeline, Git, LDAP), 'OWASP Markup Formatter', 'Build Timeout', 'Credentials Binding', and 'Folders' (Ant, Gradle, Pipeline: GitHub Groovy Libraries, Pipeline: Stage View, Matrix Authorization Strategy, PAM Authentication, Mailer). A note at the bottom right of the card says '** - required dependency'. At the very bottom of the card, it says 'Jenkins 2.361.3'.

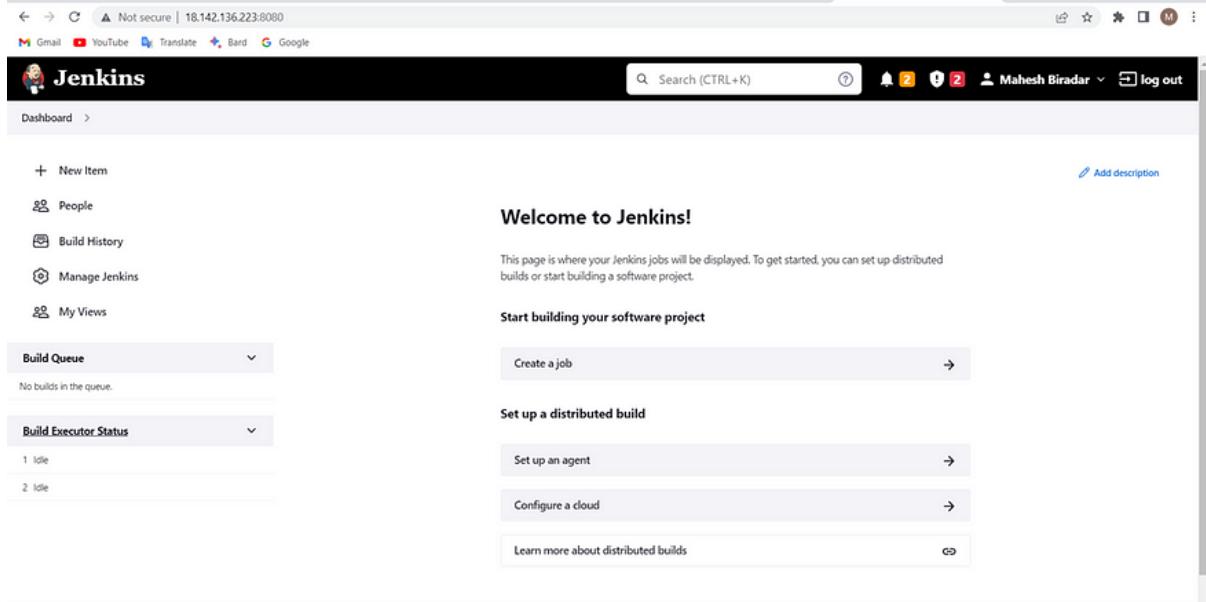
After completing the installation of the suggested plugin you need to set the First Admin User for Jenkins.

The screenshot shows the Jenkins 'Create First Admin User' page. At the top, there's a navigation bar with links to Gmail, YouTube, Translate, Bard, and Google. Below the navigation bar is a 'Create First Admin User' card with the title 'Create First Admin User'. It contains four input fields: 'Username' (admin), 'Password' (****), 'Confirm password' (****), and 'Full name' (Mahesh Biradar). At the bottom of the card, there are two buttons: 'Skip and continue as admin' and 'Save and Continue'. Below this card is another 'Create First Admin User' card, which is currently empty, showing only the field labels without any input.

Click Save and Continue



Start Using Jenkins



***** ANSIBLE INSTALLATION *****

Add Ansible repository

```
sudo apt-add-repository ppa:ansible/ansible
```

```

root@jenkins-ansible:~# sudo apt-add-repository ppa:ansible/ansible
Ansible is a radically simple IT automation platform that makes your applications and systems easier to deploy. Avoid writing scripts or custom code to deploy and update your applications—automate in a language that approaches plain English, using SSH, with no agents to install on remote systems.

If you face any issues while installing Ansible PPA, file an issue here:
https://github.com/ansible-community/ppa/issues
More info: https://launchpad.net/ansible/+archive/ubuntu/ansible
Press [ENTER] to continue or Ctrl-C to cancel adding it.

Hit:1 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease
Ign:4 https://pkg.jenkins.io/debian-stable binary/ InRelease
Hit:5 https://pkg.jenkins.io/debian-stable binary/ Release
Hit:6 http://security.ubuntu.com/ubuntu focal-security InRelease
Get:7 http://ppa.launchpad.net/ansible/ansible/ubuntu focal InRelease [18.0 kB]
Get:9 http://ppa.launchpad.net/ansible/ansible/ubuntu focal/main amd64 Packages [1132 B]
Get:10 http://ppa.launchpad.net/ansible/ansible/ubuntu focal/main Translation-en [756 B]
Fetched 19.9 kB in 2s (13.2 kB/s)
Reading package lists... Done
root@jenkins-ansible:~#

```

Now fetch latest update & install Ansible

```

sudo apt update
sudo apt-get install ansible -y

```

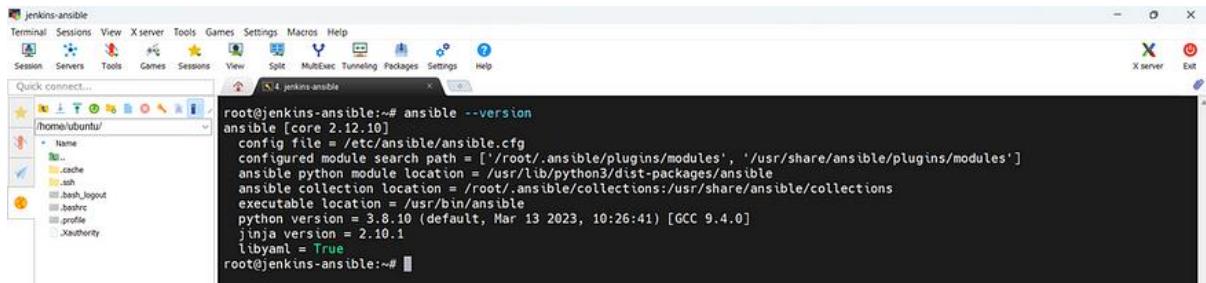
```

root@jenkins-ansible:~# sudo apt update
Hit:1 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease
Ign:4 https://pkg.jenkins.io/debian-stable binary/ InRelease
Hit:5 https://pkg.jenkins.io/debian-stable binary/ Release
Hit:6 http://ppa.launchpad.net/ansible/ansible/ubuntu focal InRelease
Hit:7 http://security.ubuntu.com/ubuntu focal-security InRelease
Reading package lists... Done
Building dependency tree
Reading state information... Done
25 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@jenkins-ansible:~# sudo apt-get install ansible -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  ansible-core python3-bcrypt python3-jmespath python3-kerberos python3-ntlm-auth python3-packaging python3-paramiko
  python3-pyparsing python3-requests-kerberos python3-requests-ntlm python3-resolvelib python3-winrm python3-xmldict sshpass
Suggested packages:
  python3-gssapi python-pyparsing-doc
The following NEW packages will be installed:
  ansible-core python3-bcrypt python3-jmespath python3-kerberos python3-ntlm-auth python3-packaging python3-paramiko
  python3-pyparsing python3-requests-kerberos python3-requests-ntlm python3-resolvelib python3-winrm python3-xmldict sshpass
0 upgraded, 15 newly installed, 0 to remove and 25 not upgraded.
Need to get 22.3 MB of archives.
After this operation, 323 MB of additional disk space will be used.
Get:1 http://ppa.launchpad.net/ansible/ansible/ubuntu focal/main amd64 python3-resolvelib all 0.5.4-2ppa-focal [12.6 kB]
Get:2 http://ppa.launchpad.net/ansible/ansible/ubuntu focal/main amd64 ansible-core all 2.12.10-1ppa-focal [943 kB]
Get:3 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 python3-pyparsing all 2.4.6-1 [61.3 kB]
Get:4 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 python3-packaging all 20.3-1 [26.8 kB]
Get:5 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 python3-jmespath all 0.9.4-2ubunt1 [21.5 kB]
Get:6 http://ppa.launchpad.net/ansible/ansible/ubuntu focal/main amd64 ansible all 5.10.0-1ppa-focal [21.0 MB]
Get:7 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 python3-kerberos amd64 1.1.14-3.1build1 [22.6 kB]
Get:8 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 python3-ntlm-auth all 1.1.0-1 [19.6 kB]

```

Now check Ansible version

```
ansible - version
```



```
root@jenkins-ansible:~# 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, Mar 13 2023, 10:26:41) [GCC 9.4.0]
  jinja version = 2.10.1
  libyaml = True
root@jenkins-ansible:~#
```

***** MAVEN INSTALLATION *****

Check version before install

```
mvn - version
```

Change dir to /opt and download maven

```
cd /opt/
ls
wget https://dlcdn.apache.org/maven/maven-3/3.9.1/binaries/apache-maven-3.9.1-bin.zip
apt-get install unzip -y
unzip apache-maven-3.9.1-bin.zip
ls
rm -rf apache-maven-3.9.1-bin.zip
ls
```

```
root@jenkins-ansible:~# mvn --version
Command 'mvn' not found, but can be installed with:
apt install maven

root@jenkins-ansible:~# cd /opt/
root@jenkins-ansible:/opt# ls
root@jenkins-ansible:/opt# wget https://dlcdn.apache.org/maven/maven-3/3.9.1/binaries/apache-maven-3.9.1-bin.zip
--2023-06-02 12:05:02-- https://dlcdn.apache.org/maven/maven-3/3.9.1/binaries/apache-maven-3.9.1-bin.zip
Resolving dlcdn.apache.org (dlcdn.apache.org)... 151.101.2.132, 2a04:4e42:644
Connecting to dlcdn.apache.org (dlcdn.apache.org)|151.101.2.132|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 9143026 (8.7M) [application/zip]
Saving to: 'apache-maven-3.9.1-bin.zip'

apache-maven-3.9.1-bin.zip      100%[=====]  8.72M  ---KB/s   in 0.07s

2023-06-02 12:05:02 (133 MB/s) - 'apache-maven-3.9.1-bin.zip' saved [9143026/9143026]

root@jenkins-ansible:/opt# apt-get install unzip -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
Suggested packages:
  zip
The following NEW packages will be installed:
  unzip
0 upgraded, 1 newly installed, 0 to remove and 25 not upgraded.
Need to get 168 kB of archives.
After this operation, 593 kB of additional disk space will be used.
Get:1 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 unzip amd64 6.0-25ubuntu1.1 [168 kB]
Fetched 168 kB in 0s (9796 kB/s)
Selecting previously unselected package unzip.
(Reading database ... 112196 files and directories currently installed.)
```

```
root@jenkins-ansible:~# ls
apache-maven-3.9.1 apache-maven-3.9.1-bin.zip
root@jenkins-ansible:~# rm -rf apache-maven-3.9.1-bin.zip
root@jenkins-ansible:~# ls
apache-maven-3.9.1
root@jenkins-ansible:~#
```

Configure maven home path

```
vim ~/.bashrc
```

```
root@jenkins-ansible:~# vim ~/.bashrc
root@jenkins-ansible:~#
```

```
## Add end of the file & save it.
```

```
export M2_HOME=/opt/apache-maven-3.9.1
export PATH=$PATH:$M2_HOME/bin
```

```

Session Servers Tools Games Sessions View Split MultiTerm Tunneling Packages Settings Help
Quick connect...
/home/ubuntu/
  • Name
  • ~
  • .cache
  • .ssh
  • .ssh_logout
  • .profile
  • .xauthority
X server Exit

alias ls='ls --color=auto'
alias ll='ls -alt'
alias la='ls -A'
alias l='ls -C'

# some more ls aliases
alias ll='ls -altF'
alias la='ls -A'
alias l='ls -C'

# Alias definitions.
# You may want to put all your additions into a separate file like
# ~/.bash_aliases, instead of adding them here directly.
# See /usr/share/doc/bash-doc/examples/ in the bash-doc package.

if [ -f ~/._bash_aliases ]; then
    . ~/._bash_aliases
fi

# enable programmable completion features (you don't need to enable
# this, if it's already enabled in /etc/bash.bashrc and /etc/profile
# sources /etc/bash_completion).
#if [ -f /etc/bash_completion ] && ! shopt -o posix; then
#    . /etc/bash_completion
#fi

export M2_HOME=/opt/apache-maven-3.9.1
export PATH=$PATH:$M2_HOME/bin

```

source ~/.bashrc

Check version again now

```

mvn - version
mvn - help

```

```

Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiTerm Tunneling Packages Settings Help
jenkins-ansible
Quick connect...
/home/ubuntu/
  • Name
  • ~
  • .cache
  • .ssh
  • .ssh_logout
  • .profile
  • .xauthority
X server Exit

root@jenkins-ansible:/opt# source ~/.bashrc
root@jenkins-ansible:/opt# mvn --version
Apache Maven 3.9.1 (2e178502fcdbff201671fb2537d0cb4b4cc58f8)
Maven home: /opt/apache-maven-3.9.1
Java version: 11.0.19, vendor: Ubuntu, runtime: /usr/lib/jvm/java-11-openjdk-amd64
Default locale: en, platform encoding: UTF-8
OS name: "linux", version: "5.15.0-1036-aws", arch: "amd64", family: "unix"
root@jenkins-ansible:/opt# mvn --help

usage: mvn [options] [<goal(s)>] [<phase(s)>]

Options:
  -am,--also-make
  If project list is specified, also
  build projects required by the
  list
  -amd,--also-make-dependents
  If project list is specified, also
  build projects that depend on
  projects on the list
  -B,--batch-mode
  Run in non-interactive (batch)
  mode (disables output color)
  -b,--builder <arg>
  The id of the build strategy to
  use
  -C,--strict-checksums
  Fail the build if checksums don't
  match
  -c,--lax-checksums
  Warn if checksums don't match
  -color <arg>
  Defines the color mode of the
  output. Supported are 'auto',
  'always', 'never'.
  -cpu,--check-plugin-updates
  Ineffective, only kept for
  backward compatibility
  -D,--define <arg>
  Define a user property
  -e,--errors
  Produce execution error messages
  -emp,--encrypt-master-password <arg>
  Encrypt master security password
  -ep,--encrypt-password <arg>
  Encrypt server password
  -f,--file <arg>
  Force the use of an alternate POM

```

@@ [Install Sonarqube](#) @@

***** SONARQUBE INSTALLATION *****

Pre-Requisites

Jenkins Server Details:

Operating System : Ubuntu

Hostname : sonarqube

RAM : 2 GB

CPU : 1 Core

EC2 Instance : t2.small

The screenshot shows the AWS EC2 Instances details page for instance i-050da8119d4e0b82c. The instance summary table contains the following information:

Attribute	Value
Instance ID	i-050da8119d4e0b82c (sonarqube)
IPv6 address	-
Hostname type	IP name: ip-172-31-1-35.ap-southeast-1.compute.internal
Answer private resource DNS name	IPv4 (A)
Auto-assigned IP address	18.138.243.161 [Public IP]
IAM Role	-
IMDSv2	Optional
Public IPv4 address	18.138.243.161 open address
Private IP4 address	172.31.1.35
Public IPv4 DNS	ec2-18-138-243-161.ap-southeast-1.compute.amazonaws.com open address
Private IP DNS name (IPv4 only)	ip-172-31-1-35.ap-southeast-1.compute.internal
Instance state	Running
Instance type	t2.small
VPC ID	vpc-03c1ae9fa1980e9be
Subnet ID	subnet-039592c2b3270c7d0

Update repository of ubuntu

```
## Download URL: https://www.sonarsource.com/products/sonarqube/downloads/
sudo -i
sudo apt update
```

```

ubuntu@ip-172-31-1-35:~$ sudo apt update
root@ip-172-31-1-35:~# sudo apt update
Hit:1 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:3 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Get:4 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 Packages [8620 kB]
Get:5 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/universe Translation-en [5124 kB]
Get:6 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 c-n-f Metadata [265 kB]
Get:7 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 c-n-f Translation-en [104 kB]
Get:8 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [144 kB]
Get:9 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/multiverse Translation-en [104 kB]
Get:10 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/multiverse amd64 c-n-f Metadata [9136 B]
Get:11 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [2611 kB]
Get:12 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [439 kB]
Get:13 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Metadata [16.8 kB]
Get:14 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [1937 kB]
Get:15 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/restricted Translation-en [273 kB]
Get:16 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [1067 kB]
Get:17 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe Translation-en [254 kB]
Get:18 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe amd64 c-n-f Metadata [24.9 kB]
Get:19 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [25.2 kB]
Get:20 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/multiverse Translation-en [7408 B]
Get:21 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 c-n-f Metadata [612 B]
Get:22 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/main amd64 Packages [45.7 kB]
Get:23 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/main Translation-en [16.1 kB]
Get:24 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/main amd64 c-n-f Metadata [142 B]
Get:25 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/restricted amd64 c-n-f Metadata [116 B]
Get:26 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages [25.0 kB]
Get:27 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/universe Translation-en [16.3 kB]
Get:28 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/universe amd64 c-n-f Metadata

```

Change time zone

```

date
timedatectl
sudo timedatectl set-timezone Asia/Kolkata
timedatectl
date

```

```

root@ip-172-31-1-35:~# date
Fri Jun 2 07:04:14 UTC 2023
root@ip-172-31-1-35:~# timedatectl
          Local time: Fri 2023-06-02 07:04:22 UTC
      Universal time: Fri 2023-06-02 07:04:22 UTC
            RTC time: Fri 2023-06-02 07:04:22
           Time zone: Etc/UTC (UTC, +0000)
System clock synchronized: yes
          NTP service: active
    RTC in local TZ: no
root@ip-172-31-1-35:~# sudo timedatectl set-timezone Asia/Kolkata
root@ip-172-31-1-35:~# timedatectl
          Local time: Fri 2023-06-02 12:34:37 IST
      Universal time: Fri 2023-06-02 07:04:37 UTC
            RTC time: Fri 2023-06-02 07:04:37
           Time zone: Asia/Kolkata (IST, +0530)
System clock synchronized: yes
          NTP service: active
    RTC in local TZ: no
root@ip-172-31-1-35:~# date
Fri Jun 2 12:34:45 IST 2023
root@ip-172-31-1-35:~#

```

Change time hostname

```

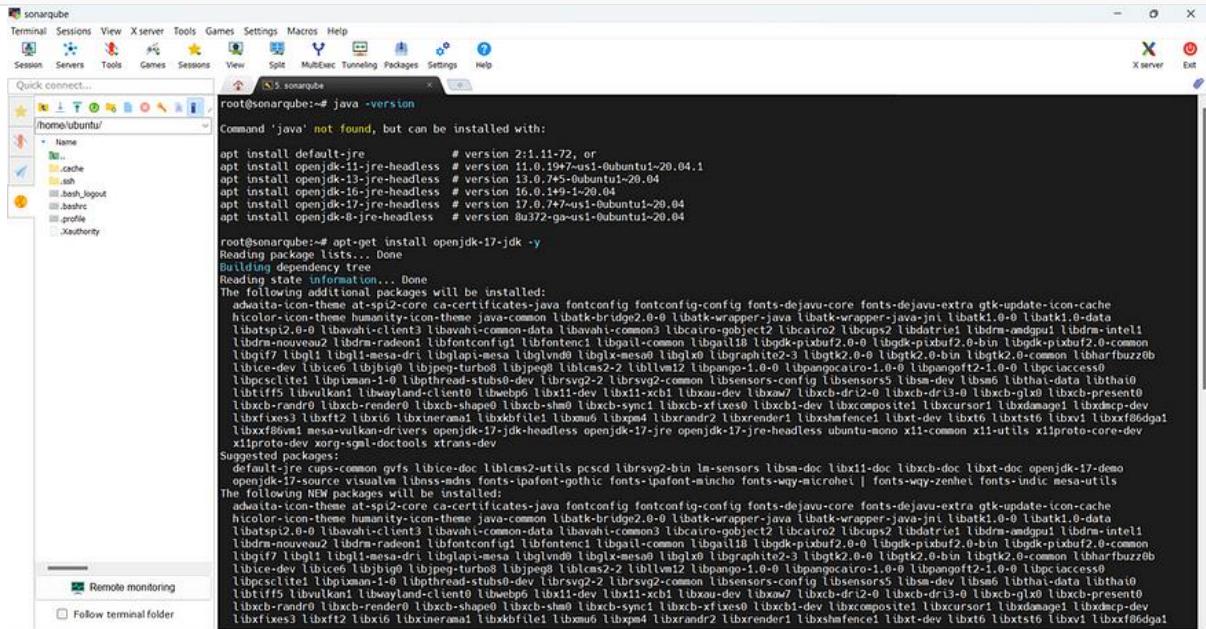
hostnamectl set-hostname sonarqube
bash

```



Install Java

```
java -version
apt-get install openjdk-17-jdk -y ## For sonarqube-10.0.0.68432.zip
java -version
```



Install Sonarqube

```
cd /opt/
wget https://binaries.sonarsource.com/Distribution/sonarqube/sonarqube-10.0.0.68432.zip
apt install unzip -y
unzip sonarqube-10.0.0.68432.zip
```

```

root@sonarqube:~# cd /opt/
root@sonarqube:/opt# wget https://binaries.sonarsource.com/Distribution/sonarqube/sonarqube-10.0.0.68432.zip
--2023-06-02 12:38:23-- https://binaries.sonarsource.com/Distribution/sonarqube/sonarqube-10.0.0.68432.zip
Resolving binaries.sonarsource.com (binaries.sonarsource.com)... 52.84.251.8, 52.84.251.58, 52.84.251.16, ...
Connecting to binaries.sonarsource.com (binaries.sonarsource.com)|52.84.251.8|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 352909963 (337M) [binary/octet-stream]
Saving to: 'sonarqube-10.0.0.68432.zip'

sonarqube-10.0.0.68432.zip      100%[=====] 336.56M 62.1MB/s   in 5.8s

2023-06-02 12:38:29 (58.5 MB/s) - 'sonarqube-10.0.0.68432.zip' saved [352909963/352909963]

root@sonarqube:/opt# apt install unzip -y
Reading package lists... Done
Building dependency tree...
Reading state information... Done
Suggested packages:
  zip
The following NEW packages will be installed:
  unzip
0 upgraded, 1 newly installed, 0 to remove and 24 not upgraded.
Need to get 168 kB of additional disk space will be used.
Get:1 http://ppa-southeast-eu.s2.archive.ubuntu.com/ubuntu focal-updates/main amd64 unzip amd64 6.0-25ubuntu1.1 [168 kB]
Fetched 168 kB in 0s (62.1 MB/s)
Selecting previously unselected package unzip.
(Reading database ... 77587 files and directories currently installed.)
Preparing to unpack .../unzip_6.0-25ubuntu1.1_amd64.deb ...
Unpacking unzip (6.0-25ubuntu1.1) ...
Setting up unzip (6.0-25ubuntu1.1) ...
Processing triggers for mime-support (3.64ubuntu1) ...
Processing triggers for man-db (2.9.1-1) ...
root@sonarqube:/opt# unzip sonarqube-10.0.0.68432.zip
Archive: sonarqube-10.0.0.68432.zip
creating: sonarqube/
unflating: sonarqube-10.0.0.68432/license.json
unflating: sonarqube-10.0.0.68432/COPYING
creating: sonarqube-10.0.0.68432/bin/
creating: sonarqube-10.0.0.68432/bin/windows-x86-64/
unflating: sonarqube-10.0.0.68432/bin/windows-x86-64/SonarService.bat
creating: sonarqube-10.0.0.68432/bin/windows-x86-64/tb/

```

```

ls
rm -rf sonarqube-10.0.0.68432.zip
mv sonarqube-10.0.0.68432 sonarqube
ls

```

```

root@sonarqube:/opt# ls
sonarqube-10.0.0.68432  sonarqube-10.0.0.68432.zip
root@sonarqube:/opt# rm -rf sonarqube-10.0.0.68432.zip
root@sonarqube:/opt# ls
sonarqube-10.0.0.68432
root@sonarqube:/opt# mv sonarqube-10.0.0.68432 sonarqube
root@sonarqube:/opt# ls
sonarqube
root@sonarqube:/opt#

```

Create sonar user

```

useradd -d /opt/sonarqube sonar
cat /etc/passwd | grep sonar
ls -ld /opt/sonarqube
chown -R sonar:sonar /opt/sonarqube
ls -ld /opt/sonarqube

```

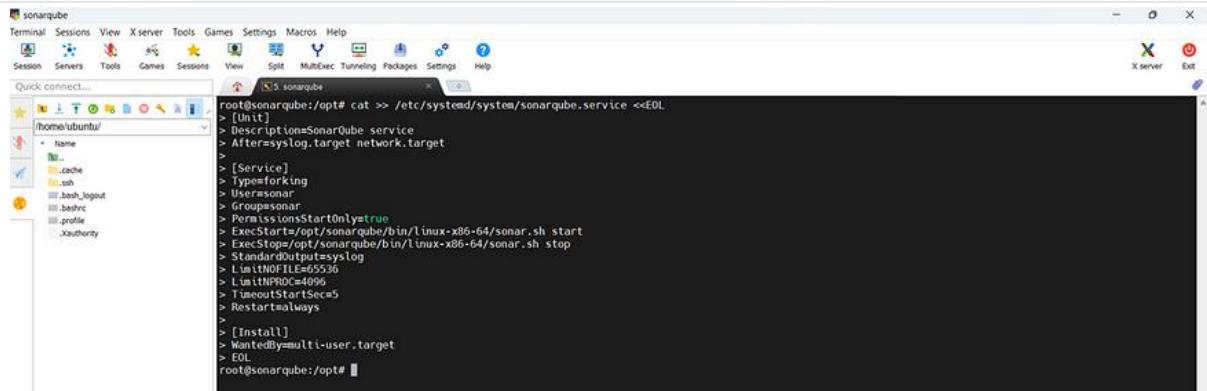
```

root@sonarqube:/opt# useradd -d /opt/sonarqube sonar
useradd: user 'sonar' already exists
root@sonarqube:/opt# cat /etc/passwd | grep sonar
sonar:x:1001:1001::/opt/sonarqube:/bin/sh
root@sonarqube:/opt# ls -ld /opt/sonarqube
drwxr-xr-x 11 root root 4096 Mar 31 07:00 /opt/sonarqube
root@sonarqube:/opt# chown -R sonar:sonar /opt/sonarqube
root@sonarqube:/opt# ls -ld /opt/sonarqube
drwxr-xr-x 11 sonar sonar 4096 Mar 31 07:00 /opt/sonarqube
root@sonarqube:/opt#

```

Create custom service for sonar

```
cat >> /etc/systemd/system/sonarqube.service <<EOL
[Unit]
Description=SonarQube service
After=syslog.target network.target
[Service]
Type=forking
User=sonar
Group=sonar
PermissionsStartOnly=true
ExecStart=/opt/sonarqube/bin/linux-x86-64/sonar.sh start
ExecStop=/opt/sonarqube/bin/linux-x86-64/sonar.sh stop
StandardOutput=syslog
LimitNOFILE=65536
LimitNPROC=4096
TimeoutStartSec=5
Restart=always
[Install]
WantedBy=multi-user.target
EOL
```



```
ls -l /etc/systemd/system/sonarqube.service
```

Open port 9000 from firewalld OR security group

9000

Service start

```
systemctl start sonarqube.service
```

Service enable & check status

```
systemctl enable sonarqube.service  
systemctl status sonarqube.service
```

```
sonarqube
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
S: sonarqube
root@sonarqube:/opt# systemctl start sonarqube.service
root@sonarqube:/opt# systemctl enable sonarqube.service
Created symlink /etc/systemd/system/multi-user.target.wants/sonarqube.service → /etc/systemd/system/sonarqube.service.
root@sonarqube:/opt# systemctl status sonarqube.service
● sonarqube.service - SonarQube service
   Loaded: loaded (/etc/systemd/system/sonarqube.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2023-06-02 12:43:11 IST; 16s ago
     Main PID: 5618 (java)
       Tasks: 59 (limit: 2349)
      Memory: 783.6M
         CPU: 0.000 CPU(s) since start
        CGroup: /system.slice/sonarqube.service
                └─ 5599 java -Xms8m -Xmx2m --add-exports=java.base/jdk.internal.ref=ALL-UNNAMED --add-opens=java.base/java.lang=ALL-UNNAMED --add-opens=java.base/java.util=ALL-UNNAMED --add-opens=java.base/java.util.concurrent=ALL-UNNAMED --add-opens=java.base/java.util.concurrent.atomic=ALL-UNNAMED --add-opens=java.net/java.nio=ALL-UNNAMED -XX:+UseSerialGC -Dcli.nameserver=/bin/elasticsearch -Dcli.id=5677 -Djava.net.preferIPv4Stack=true -Djava.net.address.cache.ttl=60 -Des.networkaddress.cache.negative.ttl=10 -Djava.security.egd=file:/dev/./urandom
Jun 02 12:43:11 sonarqube systemd[1]: Starting SonarQube service...
Jun 02 12:43:11 sonarqube sonar.sh[5576]: /usr/bin/java
Jun 02 12:43:11 sonarqube sonar.sh[5576]: Starting SonarQube...
Jun 02 12:43:11 sonarqube sonar.sh[5576]: Started SonarQube.
Jun 02 12:43:11 sonarqube systemd[1]: Started SonarQube service.
lines 1-16/16 (END)
```

Check 9000 port is used or not

```
apt install net-tools
netstat -plant | grep 9000
```

```
sonarqube
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
S: sonarqube
root@sonarqube:/opt# apt install net-tools
Reading package lists...
Building dependency tree...
Reading state information...
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 24 not upgraded.
Need to get 196 kB of additional disk space will be used.
After this operation, 864 kB of additional disk space will be used.
Get: http://ap-southeast-1.ec2.archive.ubuntu.com/focal/main amd64 net-tools amd64 1.60+git20180626.aebd88e~1ubuntu1 [196 kB]
Fetched 196 kB in 2s (129 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 77695 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20180626.aebd88e~1ubuntu1_amd64.deb ...
Unpacking net-tools (1.60+git20180626.aebd88e~1ubuntu1) ...
Setting up net-tools (1.60+git20180626.aebd88e~1ubuntu1) ...
Processing triggers for man-db (2.9.1-1) ...
root@sonarqube:/opt# netstat -plant | grep 9000
tcp6      0      0  :::9000          :::*        LISTEN      5746/java
root@sonarqube:/opt#
```

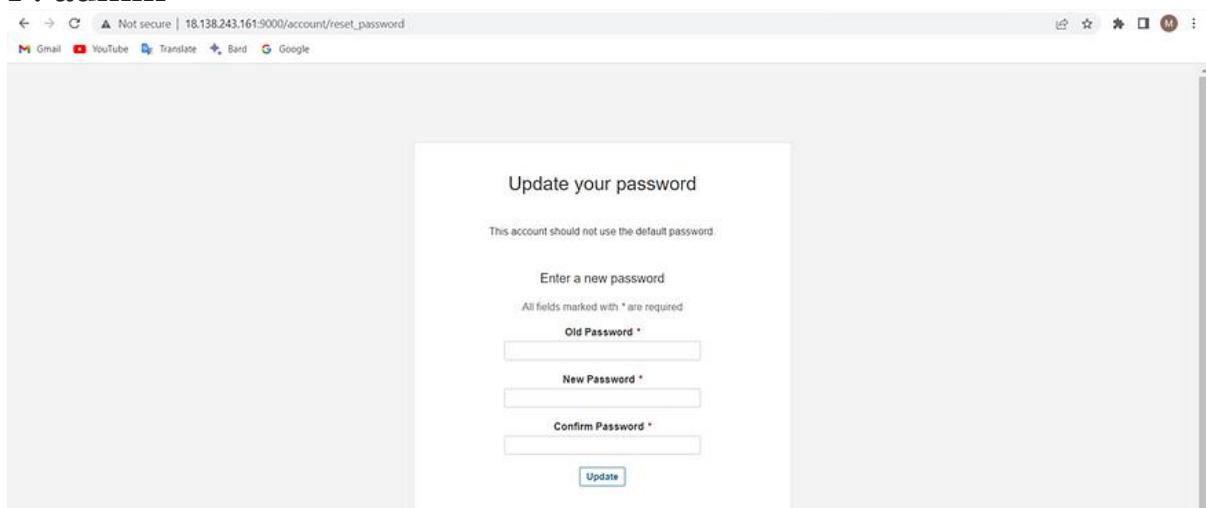
Open sonarqube on browser

URL: http://<sonarqube_ip>:9000

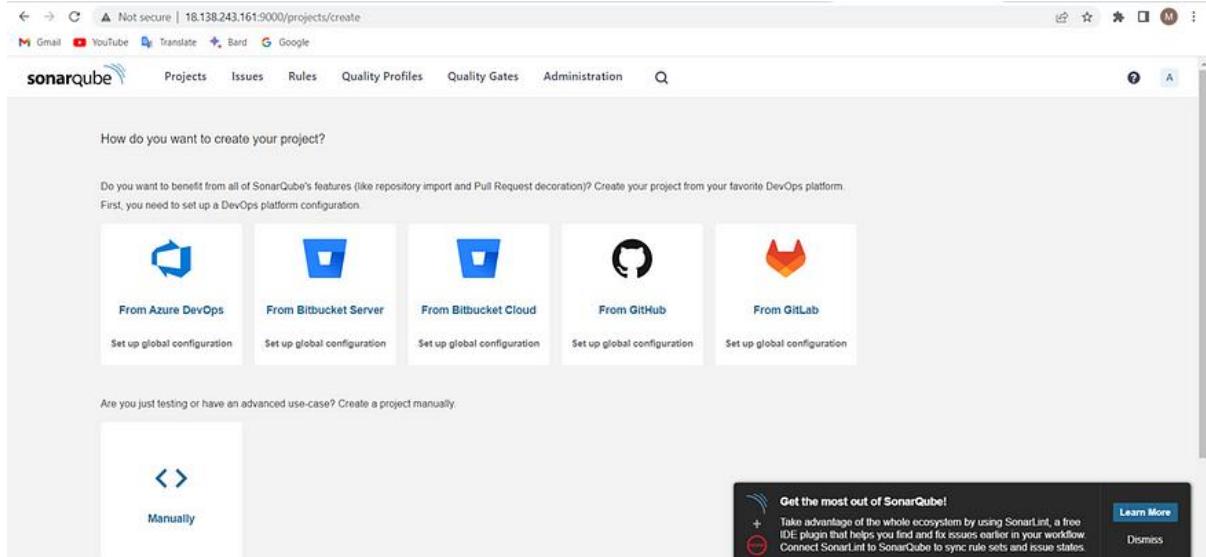


U: admin

P: admin



New Pass: admin@123



@@ [Install Kubernetes Cluster](#) @@

***** KUBERNETES CLUSTER INSTALLATION*****

Pre-Requisites

Kubernetes Cluster Server Details:

Operating System : Ubuntu

Hostname : k8-master

RAM : 2 GB

CPU : 2 Core

EC2 Instance : t3a.small

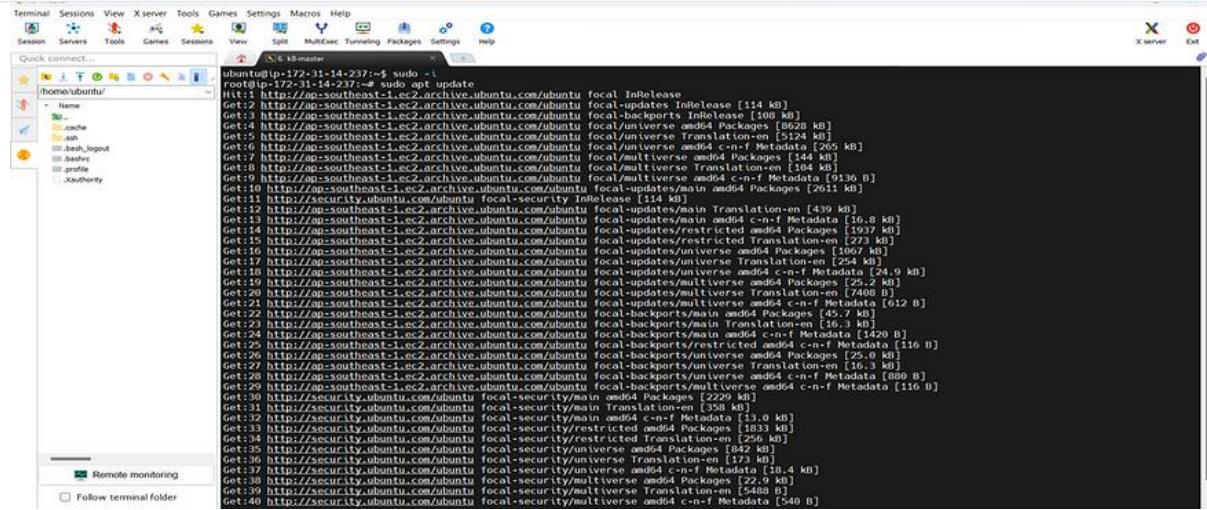
The screenshot shows the AWS EC2 Instances details page for instance `i-023bcd77265c8e7a3 (k8-master)`. The instance is currently running. Key details include:

- Instance ID:** `i-023bcd77265c8e7a3 (k8-master)`
- Public IPv4 address:** `13.250.238.236`
- Private IPv4 address:** `172.31.14.237`
- Public IPv4 DNS:** `ec2-13-250-238-236.ap-southeast-1.compute.amazonaws.com`
- Instance type:** `t3a.small`
- VPC ID:** `vpc-03c1ae9fa1980e9be`
- Subnet ID:** `subnet-039592c2b5270c7d0`

ON MASTER NODE

Switch to root user & Update repository of ubuntu

```
sudo -i  
sudo apt update
```



```
ubuntu@ip-172-31-14-237:~$ sudo -i  
root@ip-172-31-14-237:~# sudo apt update  
Hit:1 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal InRelease  
Get:2 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]  
Get:3 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease [109 kB]  
Get:4 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-universe Translation-en [8928 kB]  
Get:5 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 c-n-f Metadata [265 kB]  
Get:6 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [104 kB]  
Get:7 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/universe Translation-en [104 kB]  
Get:8 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/multiverse amd64 c-n-f Metadata [9136 B]  
Get:9 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [2011 kB]  
Get:10 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [439 kB]  
Get:11 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [1937 kB]  
Get:12 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/restricted amd64 Packages [1067 kB]  
Get:13 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [254 kB]  
Get:14 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Metadata [168 kB]  
Get:15 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe Translation-en [168 kB]  
Get:16 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Metadata [24,9 kB]  
Get:17 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe Translation-en [254 kB]  
Get:18 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe amd64 c-n-f Metadata [24,9 kB]  
Get:19 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe Translation-en [7408 B]  
Get:20 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 c-n-f Metadata [612 B]  
Get:21 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/multiverse Translation-en [7408 B]  
Get:22 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/main amd64 Packages [45,7 kB]  
Get:23 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/main Translation-en [116 kB]  
Get:24 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/main amd64 c-n-f Metadata [1420 B]  
Get:25 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/restricted amd64 c-n-f Metadata [116 B]  
Get:26 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages [25,0 kB]  
Get:27 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/universe Translation-en [25,0 kB]  
Get:28 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/universe amd64 c-n-f Metadata [880 B]  
Get:29 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports/multiverse amd64 c-n-f Metadata [116 B]  
Get:30 http://xsecurity.ubuntu.com/ubuntu focal-security/main amd64 Packages [256 kB]  
Get:31 http://xsecurity.ubuntu.com/ubuntu focal-security/main Translation-en [256 kB]  
Get:32 http://xsecurity.ubuntu.com/ubuntu focal-security/main amd64 c-n-f Metadata [13,0 kB]  
Get:33 http://xsecurity.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [1833 kB]  
Get:34 http://xsecurity.ubuntu.com/ubuntu focal-security/restricted Translation-en [256 kB]  
Get:35 http://xsecurity.ubuntu.com/ubuntu focal-security/universe amd64 Packages [22,9 kB]  
Get:36 http://xsecurity.ubuntu.com/ubuntu focal-security/universe Translation-en [173 kB]  
Get:37 http://xsecurity.ubuntu.com/ubuntu focal-security/universe amd64 c-n-f Metadata [10,4 kB]  
Get:38 http://xsecurity.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [22,9 kB]  
Get:39 http://xsecurity.ubuntu.com/ubuntu focal-security/multiverse Translation-en [561 B]  
Get:40 http://xsecurity.ubuntu.com/ubuntu focal-security/multiverse amd64 c-n-f Metadata [540 B]
```

Start by disabling the swap memory

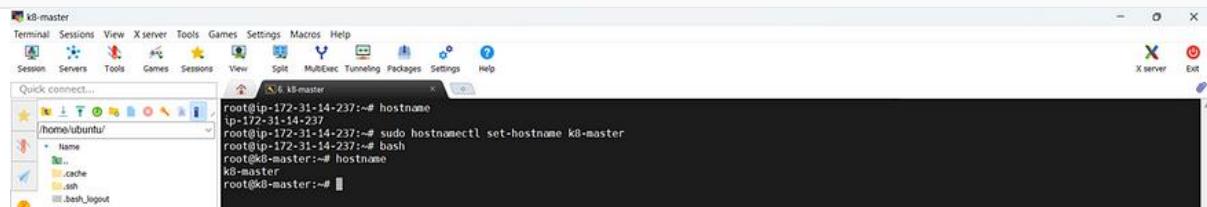
```
sudo swapoff -a  
sed -i 's/^(\.*swap.*\)$/#\1/' /etc/fstab
```



```
root@ip-172-31-14-237:~# sudo swapoff -a  
root@ip-172-31-14-237:~# sed -i 's/^(\.*swap.*\)$/#\1/' /etc/fstab  
root@ip-172-31-14-237:~#
```

Change time hostname

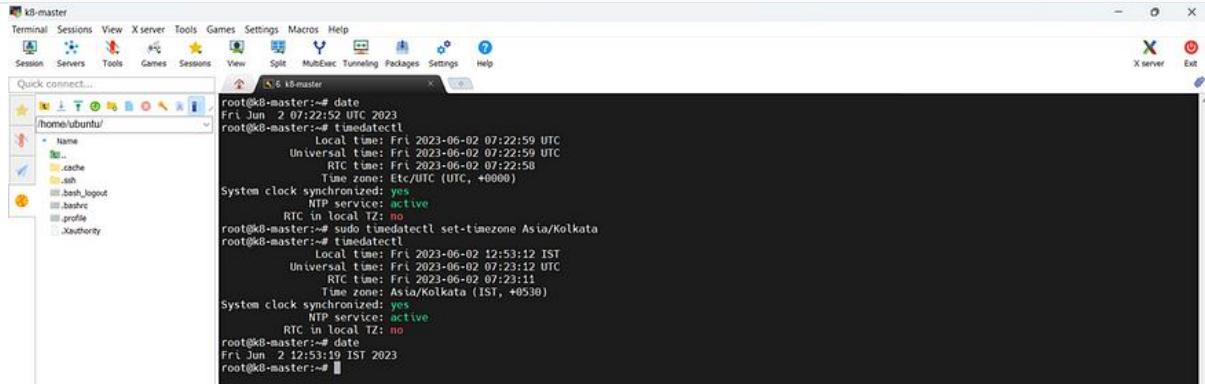
```
hostname  
sudo hostnamectl set-hostname k8-master  
bash  
hostname
```



```
root@ip-172-31-14-237:~# hostname  
ip-172-31-14-237  
root@ip-172-31-14-237:~# sudo hostnamectl set-hostname k8-master  
root@ip-172-31-14-237:~# bash  
root@k8-master:~# hostname  
k8-master  
root@k8-master:~#
```

Change time zone

```
date
timedatectl
sudo timedatectl set-timezone Asia/Kolkata
timedatectl
date
```

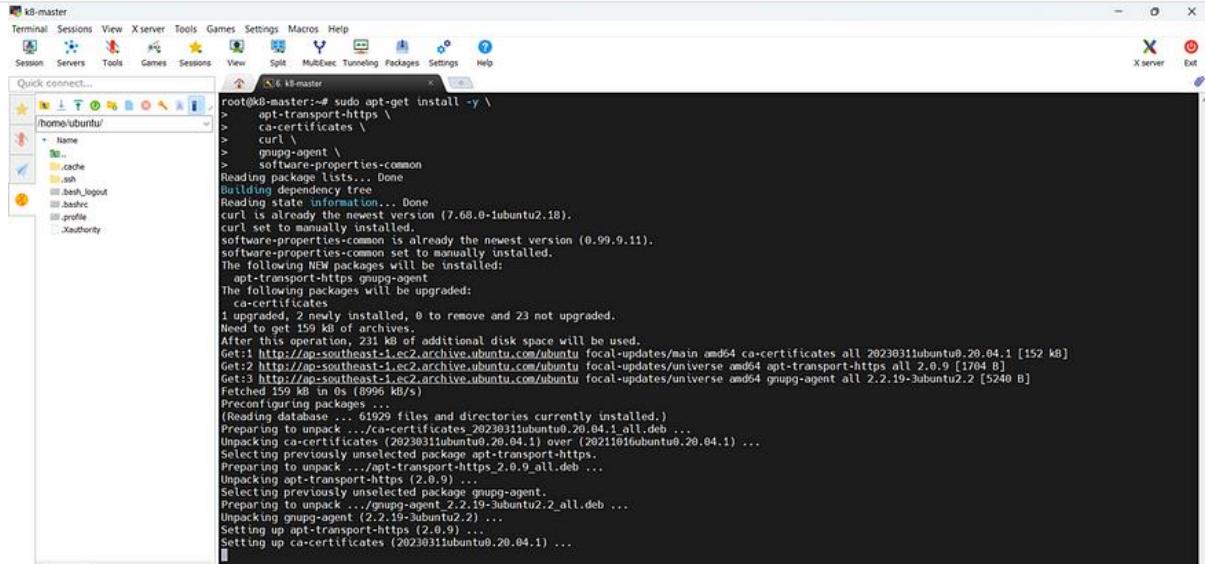


The screenshot shows a terminal window titled 'k8-master' with the command history and output of the 'date' and 'timedatectl' commands. The terminal shows the system was set to Asia/Kolkata time zone.

```
root@k8-master:~# date
Fri Jun 2 07:22:52 UTC 2023
root@k8-master:~# timedatectl
        Local time: Fri 2023-06-02 07:22:59 UTC
    Universal time: Fri 2023-06-02 07:22:59 UTC
          RTC time: Fri 2023-06-02 07:22:58
        Time zone: Etc/UTC (UTC, +0000)
System clock synchronized: yes
          NTP service: active
    RTC in local TZ: no
root@k8-master:~# sudo timedatectl set-timezone Asia/Kolkata
root@k8-master:~# timedatectl
        Local time: Fri 2023-06-02 12:53:12 IST
    Universal time: Fri 2023-06-02 07:23:12 UTC
          RTC time: Fri 2023-06-02 07:23:11
        Time zone: Asia/Kolkata (IST, +0530)
System clock synchronized: yes
          NTP service: active
    RTC in local TZ: no
root@k8-master:~# date
Fri Jun 2 12:53:19 IST 2023
root@k8-master:~#
```

Install Docker with the command

```
sudo apt-get install -y \
apt-transport-https \
ca-certificates \
curl \
gnupg-agent \
software-properties-common
```



The screenshot shows a terminal window titled 'k8-master' with the command history and output of the 'apt-get' command to install Docker dependencies. The terminal shows the installation of packages like apt-transport-https, ca-certificates, curl, gnupg-agent, and software-properties-common.

```
root@k8-master:~# sudo apt-get install -y \
> apt-transport-https \
> ca-certificates \
> curl \
> gnupg-agent \
> software-properties-common
Reading package lists... Done
Building dependency tree
Reading state information... Done
curl is already the newest version (7.68.0-1ubuntu2.18).
curl set to manually installed.
software-properties-common is already the newest version (0.99.9.11).
software-properties-common set to manually installed.
The following NEW packages will be installed:
  apt-transport-https gnupg-agent
The following packages will be upgraded:
  ca-certificates
1 upgraded, 2 newly installed, 0 to remove and 23 not upgraded.
Need to get 159 kB of archives.
After this operation, 231 kB of additional disk space will be used.
Get:1 http://ppa-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 ca-certificates all 20230311ubuntu0.20.04.1 [152 kB]
Get:2 http://ppa-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe amd64 apt-transport-https all 2.0.9 [1704 B]
Get:3 http://ppa-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe amd64 gnupg-agent all 2.2.19-3ubuntu2.2 [5240 B]
Fetched 159 kB in 0s (8996 kB/s)
Preconfiguring packages...
(Reading database ... 409,400 files and directories currently installed.)
Preparing to unpack .../ca-certificates_20230311ubuntu0.20.04.1_all.deb ...
Unpacking ca-certificates (20230311ubuntu0.20.04.1) over (20211016ubuntu0.20.04.1) ...
Selecting previously unselected package apt-transport-https.
Preparing to unpack .../apt-transport-https_2.0.9_all.deb ...
Unpacking apt-transport-https (2.0.9) ...
Selecting previously unselected package gnupg-agent.
Preparing to unpack .../gnupg-agent_2.2.19-3ubuntu2.2_all.deb ...
Unpacking gnupg-agent (2.2.19-3ubuntu2.2) ...
Setting up apt-transport-https (2.0.9) ...
Setting up ca-certificates (20230311ubuntu0.20.04.1) ...
```

Add Docker's official GPG key

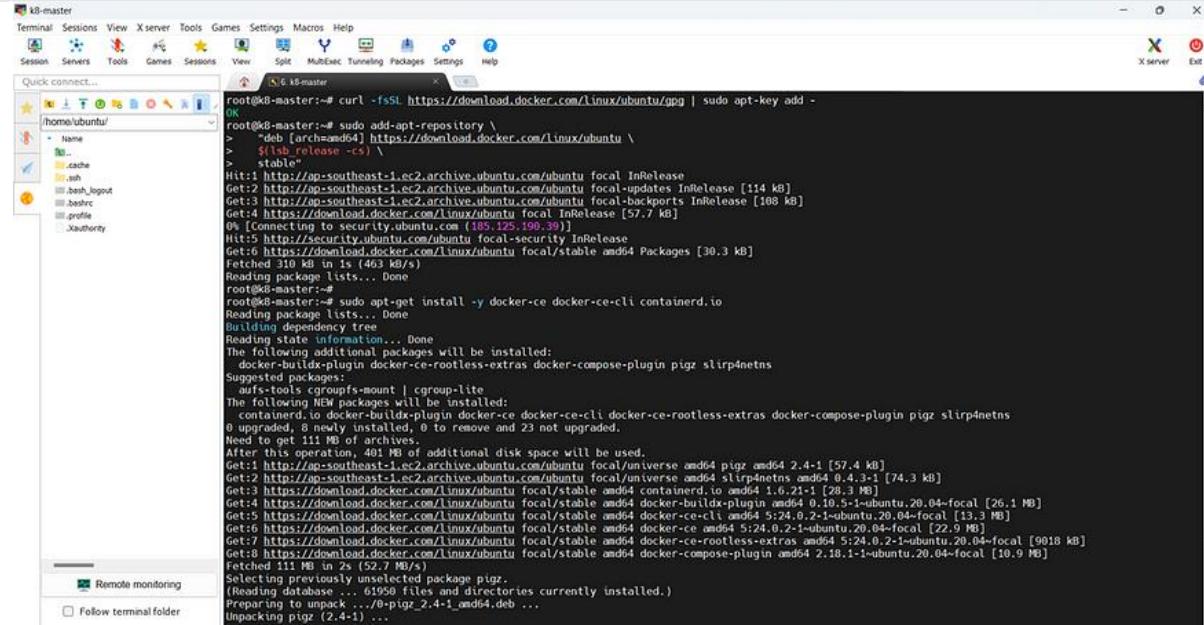
```
curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
```

Add Docker Repo

```
sudo add-apt-repository \
"deb [arch=amd64] https://download.docker.com/linux/ubuntu \
$(lsb_release -cs) \
stable"
```

Install the latest version of Docker Engine and containerd

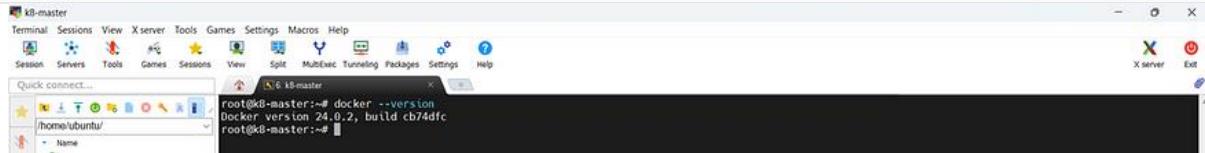
```
sudo apt-get install -y docker-ce docker-ce-cli containerd.io
```



```
root@k8-master:~# curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
OK
root@k8-master:~# sudo add-apt-repository \
"deb [arch=amd64] https://download.docker.com/linux/ubuntu \
$(lsb_release -cs) \
stable"
Hit:1 http://ppa-southeast-1.ec2.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://ppa-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:3 http://ppa-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
0% [Connecting to security.ubuntu.com (185.125.199.39)]
Hit:4 https://download.docker.com/linux/ubuntu focal InRelease [57.7 kB]
Hit:5 https://security.ubuntu.com/ubuntu focal-security InRelease
Get:6 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages [30.3 kB]
Fetched 310 kB in 1s (463 kB/s)
Reading package lists... Done
root@k8-master:~#
root@k8-master:~# sudo apt-get install -y docker-ce docker-ce-cli containerd.io
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  docker-buildx-plugin docker-ce-rootless-extras docker-compose-plugin pigz slirp4netns
Suggested packages:
  aufs-tools cgroups-mount | cgroup-lite
The following NEW packages will be installed:
  containerd.io docker-buildx-plugin docker-ce docker-ce-rootless-extras docker-compose-plugin pigz slirp4netns
0 upgraded, 8 newly installed, 0 to remove and 23 not upgraded.
Need to get 111 MB of archives.
After this operation, 401 MB of additional disk space will be used.
Get:1 http://ppa-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 pigz amd64 2.4-1 [57.4 kB]
Get:2 http://ppa-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 slirp4netns amd64 0.4.3-1 [74.3 kB]
Get:3 https://download.docker.com/linux/ubuntu focal/stable amd64 containerd.io amd64 1.6.21-1 [20.3 kB]
Get:4 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-buildx-plugin amd64 0.10.5-1ubuntu20.04-focal [26.1 kB]
Get:5 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce cli amd64 5:24.0.2-1ubuntu20.04-focal [13.3 kB]
Get:6 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce amd64 5:24.0.2-1ubuntu20.04-focal [22.9 kB]
Get:7 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce-rootless-extras amd64 5:24.0.2-1ubuntu20.04-focal [9018 kB]
Get:8 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-compose-plugin amd64 2.18.1-1ubuntu20.04-focal [10.9 kB]
Fetched 111 MB in 2s (52.7 MB/s)
Selecting previously unselected package pigz.
(Reading database ... 61950 files and directories currently installed.)
Preparing to unpack .../0-pigz_2.4-1_amd64.deb ...
Unpacking pigz (2.4-1) ...
```

Check the installation (and version) by entering the following

```
docker --version
```



```
root@k8-master:~# docker --version
Docker version 24.0.2, build cb74dfc
root@k8-master:~#
```

The product_uuid can be checked by using the command

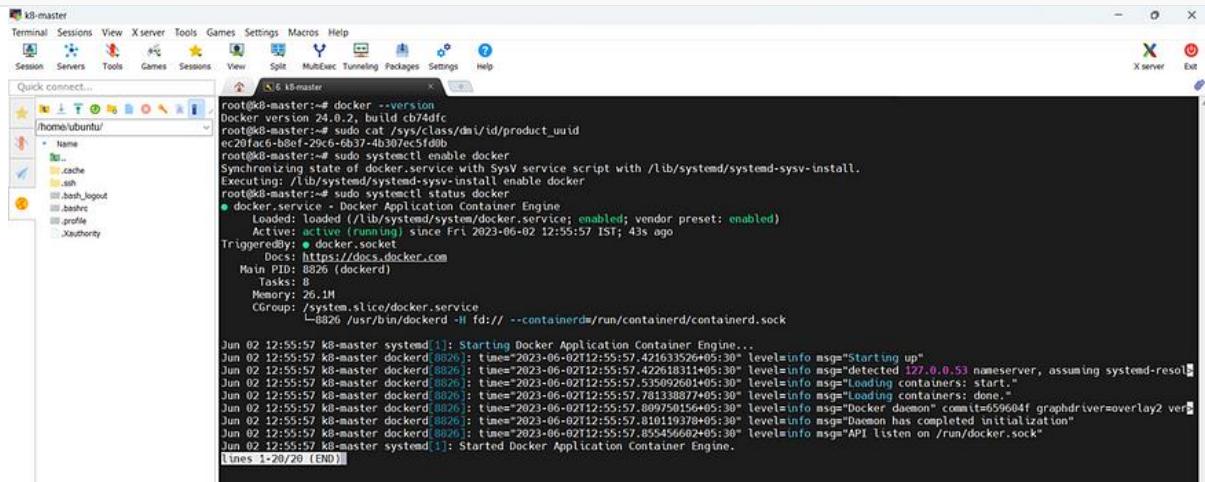
```
sudo cat /sys/class/dmi/id/product_uuid
```

Set Docker to launch at boot by entering the following

```
sudo systemctl enable docker
```

Verify Docker is running

```
sudo systemctl status docker
```



```
root@k8-master:~# docker --version
Docker version 24.0.2, build cb74dfc
root@k8-master:~# sudo cat /sys/class/dmi/id/product_uuid
root@k8-master:~# sudo systemctl enable docker
Synchronizing state of docker.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable docker
root@k8-master:~# sudo systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/lib/systemd/system/docker.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2023-06-02 12:55:57 IST; 43s ago
     TriggeredBy: ● docker.socket
      Main PID: 8826 (dockerd)
         Tasks: 8
        Memory: 26.1M
        CGroup: /system.slice/docker.service
                └─8826 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

Jun 02 12:55:57 k8-master systemd[1]: Starting Docker Application Container Engine...
Jun 02 12:55:57 k8-master dockerd[8826]: time="2023-06-02T12:55:57.421633526+05:30" level=info msg="Starting up"
Jun 02 12:55:57 k8-master dockerd[8826]: time="2023-06-02T12:55:57.422633149+05:30" level=info msg="detected 127.0.0.53 nameserver, assuming systemd-resolved"
Jun 02 12:55:57 k8-master dockerd[8826]: time="2023-06-02T12:55:57.422633149+05:30" level=info msg="Loading containers: done."
Jun 02 12:55:57 k8-master dockerd[8826]: time="2023-06-02T12:55:57.781338774+05:30" level=info msg="Locking containers: done."
Jun 02 12:55:57 k8-master dockerd[8826]: time="2023-06-02T12:55:57.800975015+05:30" level=info msg="Locking container commit:659604f graphdriver:overlay2"
Jun 02 12:55:57 k8-master dockerd[8826]: time="2023-06-02T12:55:57.810119378+05:30" level=info msg="Daemon has completed initialization"
Jun 02 12:55:57 k8-master dockerd[8826]: time="2023-06-02T12:55:57.855456682+05:30" level=info msg="API listen on /run/docker.sock"
Jun 02 12:55:57 k8-master systemd[1]: Started Docker Application Container Engine.
lines 1-20/20 (END)
```

Add Kubernetes Repo

```
{
curl -s https://packages.cloud.google.com/apt/doc/apt-key.gpg | apt-key add -
echo "deb https://apt.kubernetes.io/ kubernetes-xenial main" >
/etc/apt/sources.list.d/kubernetes.list
}
```

```
root@k8-master:~# curl -s https://packages.cloud.google.com/apt/doc/apt-key.gpg | apt-key add -
> echo "deb https://apt.kubernetes.io/ kubernetes-xenial main" > /etc/apt/sources.list.d/kubernetes.list
> 
OK

root@k8-master:~# apt update && apt-get install -y kubelet=1.21* kubeadm=1.21* kubectl=1.21* ## For 1.21 version
Hit:1 http://ppa-southeast-1.ec2.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://ppa-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Hit:3 https://download.docker.com/linux/ubuntu focal InRelease
Hit:4 http://ppa-southeast-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease
Hit:6 http://security.ubuntu.com/ubuntu focal-security InRelease
Get:5 https://packages.cloud.google.com/apt kubernetes-xenial InRelease [8993 B]
Get:7 https://packages.cloud.google.com/apt kubernetes-xenial/main amd64 Packages [66.4 kB]
Fetched 189 kB in 1s (193 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
23 packages can be upgraded, Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree
Reading state information... Done
Selected version '1.21.14-00' (kubernetes-xenial:kubernetes-xenial [amd64]) for 'kubelet'
Selected version '1.21.14-00' (kubernetes-xenial:kubernetes-xenial [amd64]) for 'kubeadm'
Selected version '1.21.14-00' (kubernetes-xenial:kubernetes-xenial [amd64]) for 'kubectl'
The following additional packages will be installed:
  contrack cri-tools ebttables kubernetes-cni socat
Suggested packages:
  nftables
The following NEW packages will be installed:
  contrack cri-tools ebttables kubeadm kubelet kubernetes-cni socat
0 upgraded, 8 newly installed, 0 to remove and 23 not upgraded.
Need to get 83.5 MB of archives.
After this operation, 336 MB of additional disk space will be used.
Get:1 http://ppa-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 contrack amd64 1:1.4-2.2 [30.3 kB]
Get:2 http://ppa-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 ebttables amd64 1.8.0-11.3build1 [60.3 kB]
Get:3 http://ppa-southeast-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 socat amd64 1.7.3.3-2 [323 kB]
Get:4 https://packages.cloud.google.com/api kubernetes-xenial/main amd64 cri-tools amd64 1.26.0-00 [18.9 MB]
Get:5 https://packages.cloud.google.com/api kubernetes-xenial/main amd64 kubernetes-cni amd64 1.2.0-00 [27.6 MB]
Get:6 https://packages.cloud.google.com/api kubernetes-xenial/main amd64 kubelet amd64 1.21.14-00 [18.9 MB]
Get:7 https://packages.cloud.google.com/api kubernetes-xenial/main amd64 kubectl amd64 1.21.14-00 [9015 kB]
Get:8 https://packages.cloud.google.com/api kubernetes-xenial/main amd64 kubeadm amd64 1.21.14-00 [8594 kB]
Fetched 83.5 MB in 8s (10.6 MB/s)
```

Install kubeadm kubelet kubectl

```
apt update && apt-get install -y kubelet=1.21* kubeadm=1.21* kubectl=1.21*
## For 1.21 version
sudo apt-mark hold kubelet kubeadm kubectl
```

```
root@k8-master:~# sudo apt-mark hold kubelet kubeadm kubectl
kubelet set on hold.
kubeadm set on hold.
kubectl set on hold.
root@k8-master:~# sudo apt-mark hold kubelet kubeadm kubectl
kubelet was already set on hold.
kubeadm was already set on hold.
kubectl was already set on hold.
root@k8-master:~#
```

Verify the installation with kubeadm

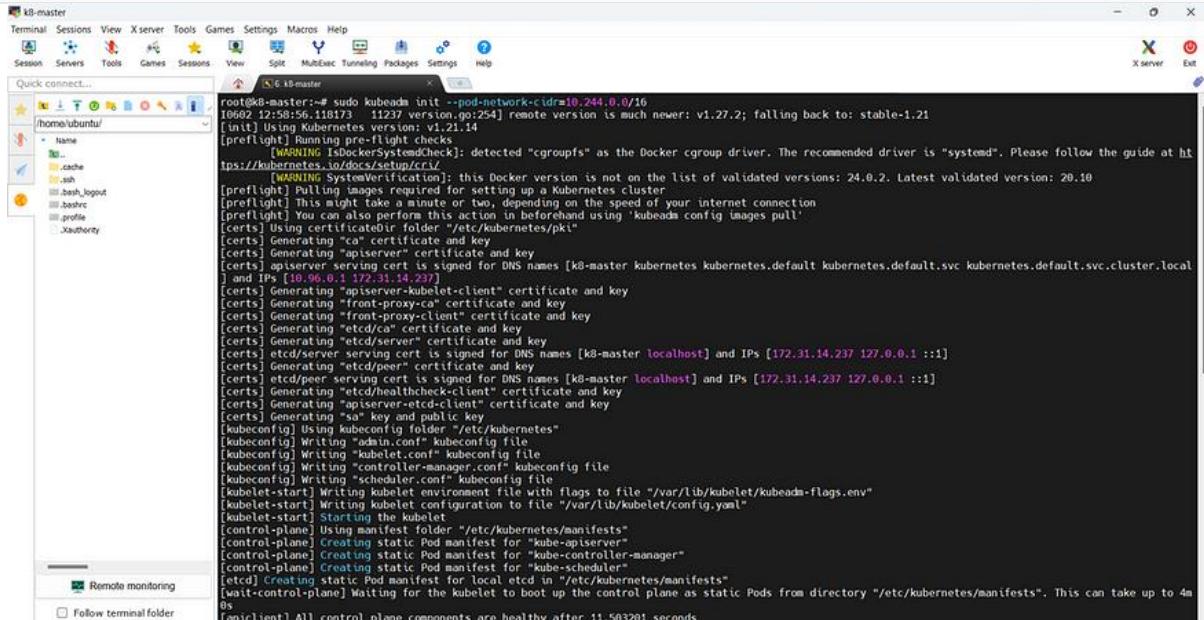
```
kubeadm version  
kubectl version -short
```



A screenshot of a terminal window titled "k8-master". The window shows the output of two commands: "kubeadm version" and "kubectl version --short". The output indicates that the kubeadm version is v1.21.14 and the kubectl version is v1.21.14. A message at the bottom states: "The connection to the server localhost:8000 was refused - did you specify the right host or port?"

Initialize Kubernetes on Master Node

```
sudo kubeadm init --pod-network-cidr=10.244.0.0/16
```



A screenshot of a terminal window titled "k8-master". The window shows the output of the "kubeadm init" command with the option "--pod-network-cidr=10.244.0.0/16". The output includes several warning messages, such as "remote version is much newer: v1.27.2; falling back to: stable-1.21", "this Docker version is not on the list of validated versions: 24.0.2. Latest validated version: 20.10", and "this Docker version is not on the list of validated versions: 24.0.2. Latest validated version: 20.10". It also shows the generation of certificates and keys for various components like etcd, kubelet, and kube-apiserver.

Enter the following to create a directory for the cluster: To start using your cluster, you need to run the following as a regular user

```
sudo mkdir -p $HOME/.kube  
sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config  
sudo chown $(id -u):$(id -g) $HOME/.kube/config
```

```

root@k8-master:~# sudo mkdir -p $HOME/.kube
root@k8-master:~# sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config
root@k8-master:~# sudo chown $(id -u):$(id -g) $HOME/.kube/config
root@k8-master:~#

```

Now check to see if the kubectl command is activated

```

kubectl get nodes
NAME STATUS ROLES AGE VERSION
master-node NOTReady master 8m3s v1.18.5

```

```

root@k8-master:~# kubectl get nodes
NAME STATUS ROLES AGE VERSION
k8-master NotReady control-plane,master 72s v1.21.14
root@k8-master:~#

```

Deploy Pod Network to Cluster

```

sudo kubectl apply -f
https://raw.githubusercontent.com/coreos/flannel/master/Documentation/kube-flannel.yml

```

```

root@k8-master:~# sudo kubectl apply -f https://raw.githubusercontent.com/coreos/flannel/master/Documentation/kube-flannel.yml
namespace/kube-flannel created
clusterrole.rbac.authorization.k8s.io/flannel created
clusterrolebinding.rbac.authorization.k8s.io/flannel created
serviceaccount/flannel created
configmap/kube-flannel-cfg created
daemonset.apps/kube-flannel-ds created
root@k8-master:~#

```

Verify that everything is running and communicating

```

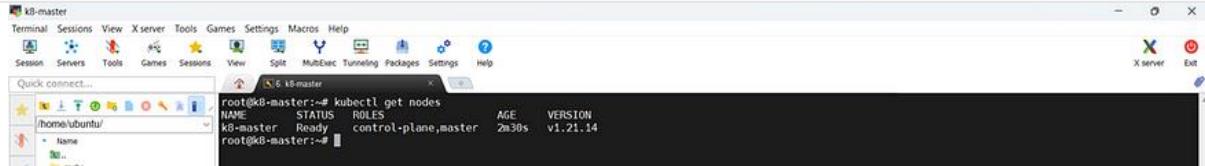
kubectl get pod - all-namespaces

```

NAMESPACE	NAME	READY	STATUS	RESTARTS	AGE
kube-flannel	kube-flannel-ds-t9qkw	1/1	Running	0	27s
kube-system	coredns-558bd4d5db-pf2dj	1/1	Running	0	114s
kube-system	coredns-558bd4d5db-wprvz	1/1	Running	0	114s
kube-system	etcd-k8-master	1/1	Running	0	2m8s
kube-system	kube-apiserver-k8-master	1/1	Running	0	2m8s
kube-system	kube-controller-manager-k8-master	1/1	Running	0	2m8s
kube-system	kube-proxy-vj5qg	1/1	Running	0	114s
kube-system	kube-scheduler-k8-master	1/1	Running	0	2m8s

Cross check your cluster is running status

```
kubectl get nodes
```



```
root@k8-master:~# kubectl get nodes
NAME      STATUS   ROLES    AGE     VERSION
k8-master   Ready    control-plane,master   2m30s   v1.21.14
root@k8-master:~#
```

Remove taint from k8-master node

```
kubectl taint nodes k8-master node-role.kubernetes.io/master:NoSchedule-
## v1.21.14
```

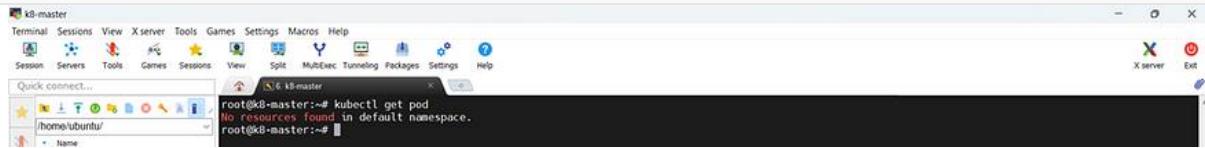


```
root@k8-master:~# kubectl taint nodes k8-master node-role.kubernetes.io/master:NoSchedule-
node/k8-master untainted
root@k8-master:~# ## v1.21.14
```

KUBERNETES CLUSTER TESTING

Check pod status

```
kubectl get pod
```



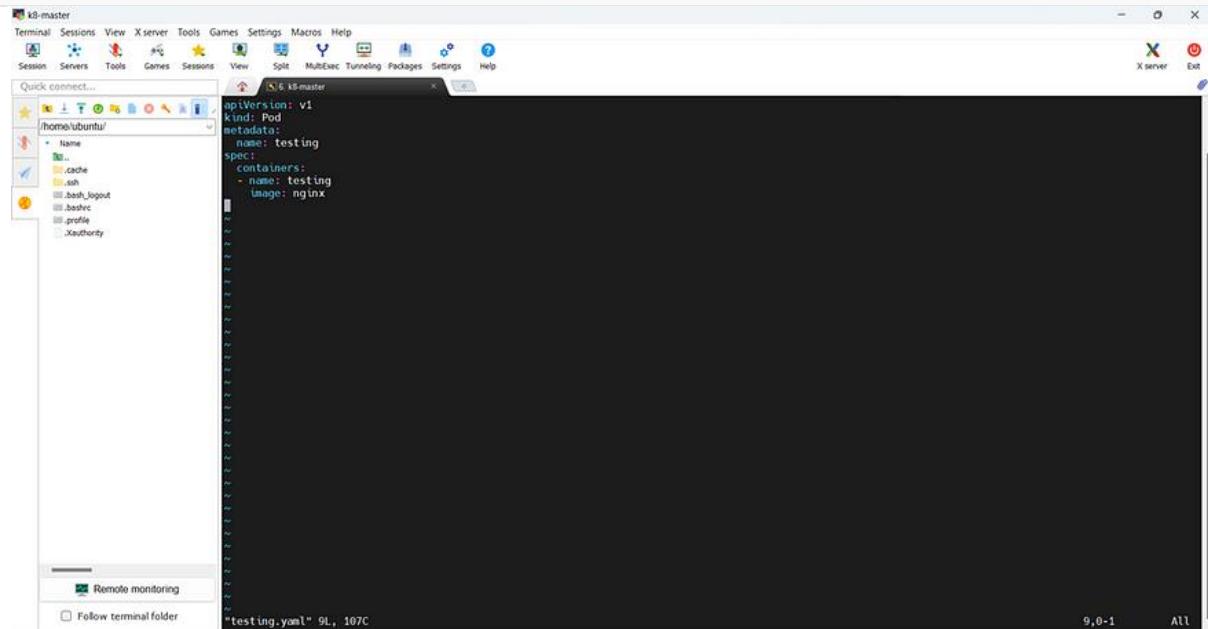
```
root@k8-master:~# kubectl get pod
No resources found in default namespace.
root@k8-master:~#
```

Create testing.yaml and insert below content

```
vim testing.yaml
```

```
apiVersion: v1
kind: Pod
```

```
metadata:  
name: testing  
spec:  
containers:  
- name: testing  
image: nginx
```



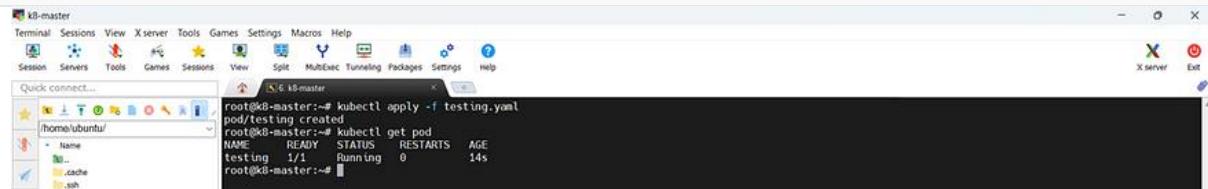
```
apiVersion: v1  
kind: Pod  
metadata:  
  name: testing  
spec:  
  containers:  
    - name: testing  
      image: nginx
```

Check pod status

```
kubectl apply -f testing.yaml
```

Check pod status

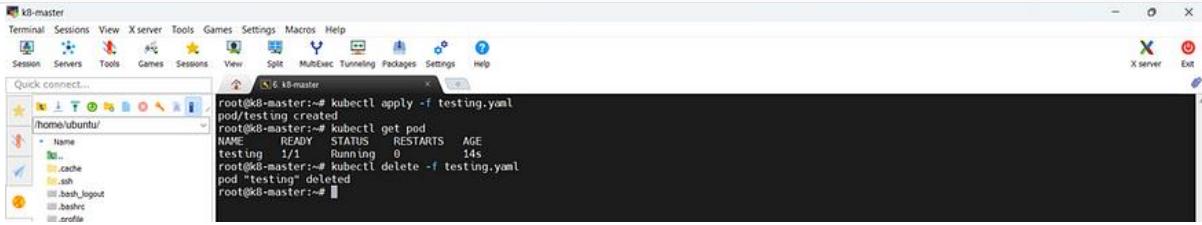
```
kubectl get pod
```



```
root@k8-master:~# kubectl apply -f testing.yaml  
pod/testing created  
root@k8-master:~# kubectl get pod  
NAME     READY   STATUS    RESTARTS   AGE  
testing   1/1    Running   0          14s  
root@k8-master:~#
```

After check delete the pod

```
kubectl delete -f testing.yaml
```



```
root@k8-master:~# kubectl apply -f testing.yaml
pod/testing created
root@k8-master:~# kubectl get pod
NAME     READY   STATUS    RESTARTS   AGE
testing   1/1     Running   0          14s
root@k8-master:~# kubectl delete -f testing.yaml
pod "testing" deleted
root@k8-master:~#
```

@@ Configure @@

****CONFIGURE : JENKINS, SONARQUBE, KUBERNETES

Configure jenkins pipeline job.

Login Jenkins > New Item > project-1 > Pipeline > OK

Pipeline:

Definition: Pipeline script from SCM

SCM: Git

Repositories:

Repository

URL: https://github.com/Mahesh8887/devops_real_time_project_1.git

Script Path: Jenkinsfile

The screenshots illustrate the configuration of a Jenkins pipeline project, specifically focusing on the transition from using an SCM repository to defining the script path directly.

Screenshot 1: Pipeline Configuration - SCM

In this initial step, the "Pipeline" tab is selected. The "Definition" dropdown is set to "Pipeline script from SCM". The "SCM" dropdown is set to "Git". The "Repository URL" field contains the URL `https://github.com/Mahesh8887/devops_real_time_project_1.git`. The "Save" and "Apply" buttons are visible at the bottom.

Screenshot 2: Pipeline Configuration - Branches to build

This screen shows the "Branches to build" section. The "Branch Specifier" field contains `*/master`. The "Save" and "Apply" buttons are visible at the bottom.

Screenshot 3: Pipeline Configuration - Script Path

In this final step, the "Pipeline" tab is selected. The "Definition" dropdown now shows "Jenkinsfile". The "Script Path" field contains "Jenkinsfile". The "Lightweight checkout" checkbox is checked. The "Save" and "Apply" buttons are visible at the bottom.

The screenshot shows the Jenkins interface for a pipeline named 'Pipeline project-1'. The left sidebar contains links for Status, Changes, Build Now, Configure, Delete Pipeline, Full Stage View, Rename, and Pipeline Syntax. The main content area is titled 'Stage View' and displays a message: 'No data available. This Pipeline has not yet run.' Below this is a 'Permalinks' section. The 'Build History' section is expanded, showing a table with one row: 'No builds'. A search bar labeled 'Filter builds...' is also present.

Jenkins integration with Sonarqube server.

Login Sonarqube server

Sonarqube > My Account > Security > Generate Tokens

Name : porject-1

Type : Global Analysis Token

Expires : 30 Days

Generate

The screenshot shows the SonarQube security interface. At the top, there's a navigation bar with links to Projects, Issues, Rules, Quality Profiles, Quality Gates, Administration, and a search bar. Below the navigation is a user profile section for 'Administrator'. The main content area has two tabs: 'Tokens' and 'Enter a new password'. The 'Tokens' tab is active, displaying a table of tokens. One row in the table is highlighted with a yellow background and contains the text: 'New token "project-1" has been created. Make sure you copy it now, you won't be able to see it again!'. Below the table is a button labeled 'Copy' with a tooltip showing the token value: 'sqx_473d8b5dc296dd4f9032324e6b9ce00a855d4'. The 'Enter a new password' tab is also visible.

After that copy token & save it.

This screenshot shows the same SonarQube security interface as the previous one, but with a different token configuration. In the 'Generate Tokens' section, the 'Name' field is empty and labeled 'Enter Token Name'. The 'Type' dropdown is set to 'Select Token Type'. A message box at the bottom left says: 'New token "project-1" has been created. Make sure you copy it now, you won't be able to see it again!'. The table below shows a single token entry for 'project-1' with a 'Revoke' button.

Go to Jenkins and create credential for Sonar token

Dashboard > Manage Jenkins > Credentials > System Global credentials (unrestricted) > Add credentials >

kind: Secret text

Scope: Global

Secret: *****

ID: SONAR_TOKEN

Des: SONAR_TOKEN

Create

The screenshot shows the Jenkins 'New credentials' creation page. The 'Kind' dropdown is set to 'Secret text'. The 'Scope' dropdown is set to 'Global (Jenkins, nodes, items, all child items, etc.)'. The 'Secret' field contains several dots ('.....'). The 'ID' field is filled with 'SONAR_TOKEN'. The 'Description' field contains 'SONAR_TOKEN'. At the bottom left is a 'Create' button.



Configure inventory file & Password less authentication with Kubernetes server.

+++++ KUBERNETES SERVER

+++++

```

passwd root
cp -r /etc/ssh/sshd_config /etc/ssh/sshd_config_orig
sed -i "s/#PermitRootLogin prohibit-password/PermitRootLogin yes/g"
/etc/ssh/sshd_config
sed -i "s/PasswordAuthentication no/PasswordAuthentication yes/g"
/etc/ssh/sshd_config
systemctl restart sshd.service

```

The screenshot shows a terminal window titled 'jenkins' with session ID '2'. The command history includes:

```

root@k8s-master:~# passwd root
New password:
Retype new password:
passwd: password updated successfully
root@k8s-master:~# cp -r /etc/ssh/sshd_config /etc/ssh/sshd_config_orig
root@k8s-master:~# sed -i "s/#PermitRootLogin prohibit-password/PermitRootLogin yes/g" /etc/ssh/sshd_config
root@k8s-master:~# sed -i "s/PasswordAuthentication no/PasswordAuthentication yes/g" /etc/ssh/sshd_config
root@k8s-master:~# systemctl restart sshd.service
root@k8s-master:~#

```

++++++ ANSIBLE SERVER

++++++

```
cat /etc/ansible/hosts
```

The screenshot shows a terminal window titled 'jenkins' with session ID '2'. The command history includes:

```

root@jenkins-ansible:~# cat /etc/ansible/hosts
# This is the default ansible 'hosts' file.
# It should live in /etc/ansible/hosts
# Comments begin with the '#' character
# Blank lines are ignored.
# Groups of hosts are delimited by [header] elements
# You can enter hostnames or ip addresses
# A hostname/ip can be a member of multiple groups

# Ex 1: Ungrouped hosts, specify before any group headers:
## green.example.com
## blue.example.com
## 192.168.1.100
## 192.168.1.110

# Ex 2: A collection of hosts belonging to the 'webservers' group:
## [webservers]
## alpha.example.org
## beta.example.org
## 192.168.1.100
## 192.168.1.110

# If you have multiple hosts following a pattern, you can specify
# them like this:
## www[001:006].example.com

# Ex 3: A collection of database servers in the 'dbservers' group:
## [dbservers]
## db01.intranet.mydomain.net
## db02.intranet.mydomain.net
## 10.25.1.56
## 10.25.1.57

# Here's another example of host ranges, this time there are no
# leading 0s:

```

```
> /etc/ansible/hosts
cat /etc/ansible/hosts
```

The screenshot shows a terminal window titled 'jenkins' with session ID '2'. The command history includes:

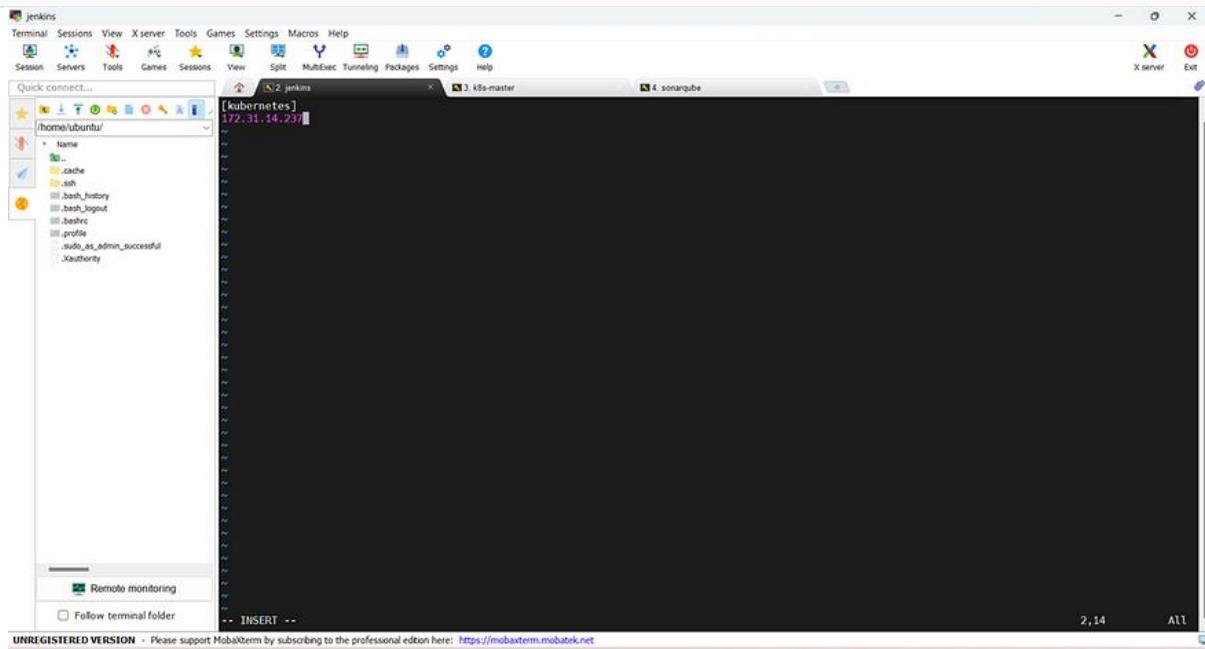
```

root@jenkins-ansible:~# > /etc/ansible/hosts
root@jenkins-ansible:~# cat /etc/ansible/hosts
root@jenkins-ansible:~#

```

vim /etc/ansible/hosts

```
[kubernetes]
<kubernetes_Private_ip>
```

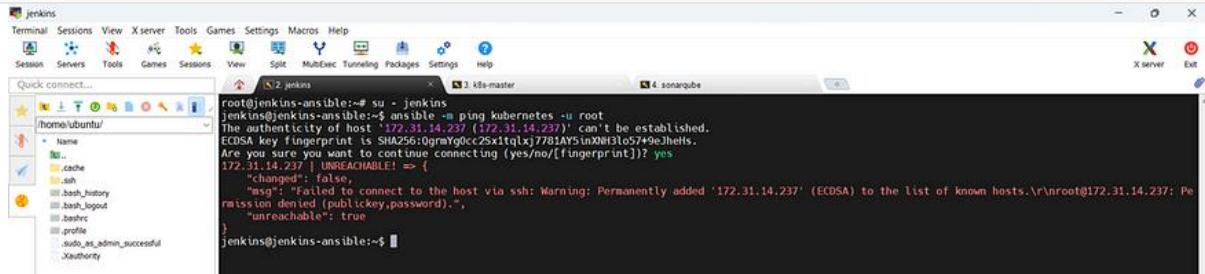


```
[kubernetes]
[home/ubuntu]
```

cat /etc/ansible/hosts

```
[kubernetes]
172.31.14.237
```

```
su - jenkins
ansible -m ping kubernetes -u root
```



```
root@jenkins-ansible:~# su - jenkins
jenkins@jenkins-ansible:~$ ansible -m ping kubernetes -u root
The authenticity of host '172.31.14.237 (172.31.14.237)' can't be established.
ECDSA key fingerprint is SHA256:0graY0c2Sxitlxj78JAY5lnXW3l057+9eheels.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
172.31.14.237 | UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: Warning: Permanently added '172.31.14.237' (ECDSA) to the list of known hosts.\r\nroot@172.31.14.237: Permission denied (publickey,password).",
    "unreachable": true
}
jenkins@jenkins-ansible:~$
```

ssh root@<kubernetes_public_ip>

```

Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
Session Name
Name cache
.bash_history .bash_logout .bashrc .profile .sudo_as_admin_successful .Xauthority
/home/ubuntu/
The authenticity of host '13.251.129.244 (13.251.129.244)' can't be established.
EDSA Key fingerprint is SHA256:0gnaYgoc2Sxitqlxj781AV5inX0W3l057+9eShells.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '13.251.129.244' (EDSA) to the list of known hosts.
root@13.251.129.244:~#
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1036-aws x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

System information as of Fri Jun 2 14:42:38 IST 2023
System load: 0.38 Users logged in: 1
Usage of /: 19.0% of 19.20GB IPv4 address for cni0: 10.244.0.1
Memory usage: 38% IPv4 address for docker0: 172.17.0.1
Swap usage: 0% IPv4 address for ens5: 172.31.14.237
Processes: 144

Expanded Security Maintenance for Applications is not enabled.
20 updates can be applied immediately.
17 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

New release '22.04.2 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/<copyright>.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

Ubuntu 20.04.6 LTS - Release Edition - 2023-06-02
Copyright © 2023 Canonical Ltd.
This is an LTS release of Ubuntu, supported until June 2028.

root@k8s-master:~# 

```

ssh-keygen

```

Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
Session Name
Name cache
.bash_history .bash_logout .bashrc .profile .sudo_as_admin_successful .Xauthority
/home/ubuntu/
jenkins@jenkins-ansible:~$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/var/lib/jenkins/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /var/lib/jenkins/.ssh/id_rsa
Your public key has been saved in /var/lib/jenkins/.ssh/id_rsa.pub
The key's randomart image is:
+---[RSA 3072]----+
|   ... |
|   o   |
|   . o o . |
|   o .o= o +|
|   = S ++.. =o|
|   . +--+ +--|
|   * .o .++o+*|
|   .@E . o. |
|   .o++ . . |
+---[SHA256]----+
jenkins@jenkins-ansible:~$ cd .ssh/
jenkins@jenkins-ansible:~/ssh$ ls
id_rsa id_rsa.pub known_hosts
jenkins@jenkins-ansible:~/ssh$ 

```

ssh-copy-id root@<kubernetes_public_ip>

```

Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
Session Name
Name cache
.bash_history .bash_logout .bashrc .profile .sudo_as_admin_successful .Xauthority
/home/ubuntu/
jenkins@jenkins-ansible:~$ ssh-copy-id root@13.251.129.244
/usr/bin/ssh-copy-id: INFO: Source of keys to be installed: "/var/lib/jenkins/.ssh/id_rsa.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
root@13.251.129.244:~#
Number of key(s) added: 1
Now try logging into the machine, with: "ssh 'root@13.251.129.244'"
and check to make sure that the only key(s) you wanted were added.
jenkins@jenkins-ansible:~$ 

```

ssh root@<kubernetes_public_ip>

```
jenkins@jenkins-ansible:~$ ssh root@13.251.129.244
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1036-aws x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

System information as of Fri Jun 2 14:46:03 IST 2023
System load: 0.54          Users logged in: 1
Usage of /: 19.0% of 19.20GB  IPv4 address for cnio0: 10.244.0.1
Memory usage: 38%          IPv4 address for docker0: 172.17.0.1
Swap usage: 0%              IPv4 address for ens5: 172.31.14.237
Processes: 147

Expanded Security Maintenance for Applications is not enabled.

20 updates can be applied immediately.
17 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

New release '22.04.2 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Fri Jun 2 14:45:44 2023 from 13.251.27.188
root@k8s-master:~#
```

```
ansible -m ping kubernetes -u root
```

```
jenkins@jenkins-ansible:~$ ansible -m ping kubernetes -u root
172.31.14.237 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
jenkins@jenkins-ansible:~$
```

Create credential for Dockerhub server login.

Dashboard > Manage Jenkins > Credentials > System Global credentials (unrestricted) > Add credentials >

kind: Secret text

Scope: Global

Secret: *****

ID: DOCKERHUB_USER

Des: DOCKERHUB_USER

Create

New credentials

Kind: Secret text

Scope: Global (Jenkins, nodes, items, all child items, etc)

Secret: *****

ID: DOCKERHUB_USER

Description: DOCKERHUB_USER

Create

Dashboard > Manage Jenkins > Credentials > System Global credentials (unrestricted) > Add credentials >

kind: Secret text

Scope: Global

Secret: *****

ID: DOCKERHUB_PASS

Des: DOCKERHUB_PASS

Create

Not secure | 13.251.27.188:8080/manage/credentials/store/system/domain/_/newCredentials

Gmail YouTube Translate Bard Google

Jenkins

Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted) >

New credentials

Kind: Secret text

Scope: Global (Jenkins, nodes, items, all child items, etc)

Secret:

ID: DOCKERHUB_PASS

Description: DOCKERHUB_PASS

Create

Not secure | 13.251.27.188:8080/manage/credentials

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Jenkins

Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted) >

Global credentials (unrestricted)

+ Add Credentials

ID	Name	Kind	Description
SONAR_TOKEN	SONAR_TOKEN	Secret text	SONAR_TOKEN
DOCKERHUB_USER	DOCKERHUB_USER	Secret text	DOCKERHUB_USER
DOCKERHUB_PASS	DOCKERHUB_PASS	Secret text	DOCKERHUB_PASS

Icons: S M L

Not secure | 13.251.27.188:8080/job/project-1/configure

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Jenkins pipeline job

Dashboard > project-1 > Pipeline

Configuration

General

Advanced Project Options

Pipeline

Definition: Pipeline script

```
1+ pipeline {
2+     agent any
3+     environment {
4+         PATH = "$PATH:/opt/apache-maven-3.9.1/bin"
5+     }
6+
7+     stages {
8+
9+         stage('CLEAN WORKSPACE') {
10+             steps {
11+                 cleanWs()
12+             }
13+         }
14+     }
15+ }
```

Use Groovy Sandbox ?

Pipeline Syntax

Save **Apply**

Jenkins

Dashboard > project-1 >

Status Changes Build Now Configure Delete Pipeline Full Stage View Rename Pipeline Syntax

Pipeline project-1

Add description Disable Project

Stage View

Average stage times: (Average full run time: ~6s)

CLEAN WORKSPACE	CODE CHECKOUT
Jun 02 1452 No Changes 333ms	Jun 02 1452 No Changes 333ms

Permalinks

Jun 2, 2023, 2:52 PM Atom feed for all Atom feed for failures

Build History trend Filter builds... Jun 2, 2023, 2:52 PM Atom feed for all Atom feed for failures

Not secure | 13.251.27.188:8080/job/project-1/configure

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Dashboard > project-1 > Pipeline

The screenshot shows the Jenkins interface for a pipeline project named 'project-1'. On the left, there's a sidebar with various Jenkins navigation links. The main area is titled 'Pipeline project-1' and contains two tabs: 'Stage View' and 'Configuration'. The 'Stage View' tab displays a timeline of stages: 'CLEAN WORKSPACE' and 'CODE CHECKOUT', each taking approximately 333ms. Below this is a 'Permalinks' section with links for the build and atom feeds. The 'Configuration' tab is active, showing the pipeline script in a code editor. The script defines a 'stages' block with two stages: 'CLEAN WORKSPACE' and 'CODE CHECKOUT'. The 'CLEAN WORKSPACE' stage uses the 'cleanshi()' step, and the 'CODE CHECKOUT' stage uses the 'git' step to clone a repository from GitHub. A 'Use Groovy Sandbox' checkbox is checked. At the bottom of the configuration page are 'Save' and 'Apply' buttons.

Jenkins

Dashboard > project-1 >

Status Changes Build Now Configure Delete Pipeline Full Stage View Rename Pipeline Syntax

Pipeline project-1

Add description Disable Project

Stage View

Average stage times: (Average full run time: ~4s)

CLEAN WORKSPACE	CODE CHECKOUT
Jun 02 1455 No Changes 258ms	Jun 02 1452 No Changes 1s

Permalinks

Jun 2, 2023, 2:55 PM Atom feed for all Atom feed for failures

Build History trend Filter builds... Jun 2, 2023, 2:55 PM Atom feed for all Atom feed for failures

Not secure | 13.251.27.188:8080/job/project-1/configure

This screenshot shows the same Jenkins interface as the previous one, but with updated stage times. The 'CLEAN WORKSPACE' stage now takes 258ms, and the 'CODE CHECKOUT' stage has been reduced to 1 second. The rest of the interface, including the sidebar, pipeline script, and build history, remains identical to the first screenshot.

Not secure | 13.251.27.188:8080/job/project-1/configure

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Dashboard > project-1 >

Configuration

Pipeline

```

1 pipeline {
2     agent any
3     environment {
4         PATH = "$PATH:/opt/apache-maven-3.9.1/bin"
5     }
6     stages {
7         stage('CLEAN WORKSPACE') {
8             steps {
9                 sh 'cleanWs()'
10            }
11        }
12        stage('CODE CHECKOUT') {
13            steps {
14                git 'https://github.com/MaheshBiradar/devops_real_time_project_1.git'
15            }
16        }
17        stage('MODIFIED IMAGE TAG') {
18            steps {
19                sh """
20                    sed -i "/image-name/latest/$JOB_NAME:v1.$BUILD_ID/g" playbooks/dep_svc.yaml
21                    sed -i "/image-name/latest/$JOB_NAME:v1.$BUILD_ID/g" playbooks/dep_svc.yaml
22                    sed -i "/image-name/$JOB_NAME:v1.$BUILD_ID/g" webapp/src/main/webapp/index.jsp
23                    ...
24                """
25            }
26        }
27    }
28 }
29

```

Save **Apply**

Jenkins

Search (CTRL+K)

Mahesh Biradar log out

Dashboard > project-1 >

Pipeline project-1

Stage View

	CLEAN WORKSPACE	CODE CHECKOUT	MODIFIED IMAGE TAG
Jun 02 1457	152ms	955ms	453ms
Jun 02 1455	183ms	1s	

Average stage times:
(Average full run time: ~3s)

Build History trend ▾

- Jun 2, 2023, 2:57 PM
- Jun 2, 2023, 2:55 PM

Add description **Disable Project**

Not secure | 13.251.27.188:8080/job/project-1/configure

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Dashboard > project-1 >

Pipeline

Configuration

Pipeline

Definition

Pipeline script

```

18 }
19 stage('MODIFIED IMAGE TAG') {
20     steps {
21         sh """
22             sed -i "/image-name/latest/$JOB_NAME:v1.$BUILD_ID/g" playbooks/dep_svc.yaml
23             sed -i "/image-name/latest/$JOB_NAME:v1.$BUILD_ID/g" playbooks/dep_svc.yaml
24             sed -i "/image-name/$JOB_NAME:v1.$BUILD_ID/g" webapp/src/main/webapp/index.jsp
25             ...
26         """
27     }
28 }
29 stage('BUILD') {
30     steps {
31         sh 'mvn clean install package'
32     }
33 }
34

```

Use Groovy Sandbox ?

Pipeline Syntax

Save **Apply**

Not secure | 13.251.27.188:8080/job/project-1/

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Jenkins

Dashboard > project-1 >

Pipeline project-1

- Status
- </> Changes
- ▷ Build Now
- Configure
- Delete Pipeline
- Full Stage View
- Rename
- Pipeline Syntax

Stage View

	CLEAN WORKSPACE	CODE CHECKOUT	MODIFIED IMAGE TAG	BUILD
Average stage times: (Average full run time: ~7s)	201ms	1s	412ms	15s
#1 Jun 02 1458 No Changes	139ms	859ms	371ms	15s
#2 Jun 02 1457 No Changes	152ms	955ms	453ms	

Add description

Disable Project

Not secure | 13.251.27.188:8080/job/project-1/configure

Gmail YouTube Translate Bard Google

Dashboard > project-1 >

Configuration

- General
- Advanced Project Options
- Pipeline**

```

10      }
11      }
12      }
13      }
14      }
15      }
16      }
17      }
18      }
19      }
20      }
21      }
22      }
23      }
24      }
25      }
26      }
27      }
28      }
29      }
30      }
31      }
32      }
33      }
34      }
35      }
36      }
37      }
38      }
39      }
40      }
41      }
42      }
43      }
44      }
45      }

```

git https://gitnmo.com/namesnmo//devops_real_time_project_1.git

stage('MODIFIED IMAGE TAG') {
 steps {
 sh ...
 sed -s "/image-name:latest/\$JOB_NAME:v1.\$BUILD_ID/g" playbooks/dep_svc.yml
 sed -i "/image-name:latest/\$JOB_NAME:v1.\$BUILD_ID/g" playbooks/dep_svc_yml
 sed -i "/IMAGE_NAME/\$JOB_NAME:v1.\$BUILD_ID/g" webapp/src/main/webapp/index.jsp
 }
}

stage('BUILD') {
 steps {
 sh 'mvn clean install package'
 }
}

stage('SONAR SCANNER') {
 environment {
 sonar_token = credentials('SONAR_TOKEN')
 }
 steps {
 sh 'mvn sonar:sonar -Dsonar.projectName=\$JOB_NAME \
 -Dsonar.projectKey=\$JOB_NAME \
 -Dsonar.host.url=http://3.1.24.180:9000 \
 -Dsonar.token=\$sonar_token'
 }
}

Use Groovy Sandbox ?

Pipeline Syntax

Save Apply

Not secure | 13.251.27.188:8080/job/project-1/

Gmail YouTube Translate Bard Google

Jenkins

Dashboard > project-1 >

Pipeline project-1

- Status
- </> Changes
- ▷ Build Now
- Configure
- Delete Pipeline
- Full Stage View
- Rename
- Pipeline Syntax

Stage View

	CLEAN WORKSPACE	CODE CHECKOUT	MODIFIED IMAGE TAG	BUILD	SONAR SCANNER
Average stage times: (Average full run time: ~15s)	191ms	1s	388ms	12s	34s
#1 Jun 02 1500 No Changes	151ms	1s	342ms	10s	34s
#2 Jun 02 1458 No Changes	139ms	859ms	371ms	15s	

Add description

Disable Project

Not secure | 3.1.24.180:9000/projects

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sonarqube Projects Issues Rules Quality Profiles Quality Gates Administration Q

My Favorites All

Filters

Quality Gate

- Passed 1
- Failed 0

Reliability (Bugs)

- A rating 0
- B rating 0
- C rating 1
- D rating 0
- E rating 0

Security (Vulnerabilities)

- A rating 1
- B rating 0
- C rating 0
- D rating 0
- E rating 0

1 project(s)

Perspective: Overall Status Sort by: Name

project-1 Passed

Last analysis: 37 seconds ago

Bugs: 1 A Vulnerabilities: 0 A Hotspots Reviewed: 0 A Code Smells: 2 A Coverage: 0.0% Duplications: 0.0% Lines: 316 XML, JSP, ...

1 of 1 shown

Embedded database should be used for evaluation purposes only
The embedded database will not scale, it will not support upgrading to newer versions of SonarQube, and there is no support for migrating your data out of it into a different database engine.

SonarQube™ technology is powered by SonarSource SA
Community Edition - Version 10.0 (build 68432) - LGPL v3 - Community - Documentation - Plugins - Web API

Dashboard > project-1 >

Configuration

- General
- Advanced Project Options
- Pipeline**

```

23      sed -i "/sonar.projectName:$JOB_NAME:v1:$BUILD_ID/g" playbooks/depsvc.yml
24      sed -i "/$IMAGE_NAME/$JOB_NAME:v1:$BUILD_ID/g" webapp/src/main/webapp/index.json
25
26
27
28  }
29
30  stage('BUILD') {
31    steps {
32      sh 'mvn clean install package'
33  }
34
35  stage('SONAR SCANNER') {
36    environment {
37      sonar_token = credentials('SONAR_TOKEN')
38    }
39    steps {
40      sh "mvn sonar:sonar -Dsonar.projectName=$JOB_NAME \
41          -Dsonar.projectKey=$JOB_NAME \
42          -Dsonar.host.url=http://3.1.24.180:9000 \
43          -Dsonar.token=$sonar_token"
44  }
45
46  stage('COPY JAR & DOCKERFILE') {
47    steps {
48      sh 'ansible-playbook playbooks/create_directory.yml'
49  }
50

```

Use Groovy Sandbox ?

Pipeline Syntax

Save **Apply**



Jenkins

Dashboard > project-1 >

Pipeline project-1

- Status
- </> Changes
- Build Now
- Configure
- Delete Pipeline
- Full Stage View
- Rename
- Pipeline Syntax

Add description

Disable Project

Stage View

	CLEAN WORKSPACE	CODE CHECKOUT	MODIFIED IMAGE TAG	BUILD	SONAR SCANNER	COPY JAR & DOCKERFILE
Average stage times: (Average full run time: ~19s)						
Jun 02 15:06	118ms	959ms	363ms	9s	24s	6s
Jun 02 15:00	151ms	1s	342ms	10s	34s	

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Session View Split MultiBrowser Tunneling Packages Settings Help

Quick connect... 2. jenkins 3. k8s-master 4. sonarqube

k8s-master

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Session View Split MultiBrowser Tunneling Packages Settings Help

root@k8s-master:/opt# ls
/home/ubuntu/
+-- Name
+-- cache
+-- .bash_history

root@k8s-master:/opt# ls
/home/ubuntu/
+-- Name
+-- cache
+-- .bash_history

root@k8s-master:/opt# ls -l
total 8
drwxr-xr-x 3 root root 4096 Jun 2 12:57 cni
drwxr-xr-x 4 root root 4096 Jun 2 12:55 containerd
root@k8s-master:/opt#

Terminal Session

```
root@k8s-master:/opt# ls
cnt contained
root@k8s-master:/opt# ls -l
total 8
drwxr-xr-x 3 root root 4096 Jun 2 12:57 cnt
drwxr-xr-x 4 root root 4096 Jun 2 12:55 containerd
root@k8s-master:/opt# ls -l
total 12
drwxr-xr-x 3 root root 4096 Jun 2 12:57 cnt
drwxr-xr-x 4 root root 4096 Jun 2 12:55 containerd
drwxr-xr-x 2 root root 4096 Jun 2 15:07 docker
root@k8s-master:/opt#
```

Configuration

General Advanced Project Options Pipeline

```
29+    stages:
29+      - name: build
29+        steps:
29+          - name: clean
29+            sh "mvn clean install package"
29+
30+          - name: sonar
30+            steps:
30+              - name: sonar_scanner
30+                sonar_token: $SONAR_TOKEN
30+
31+          - name: push
31+            steps:
31+              - name: push_dockerhub
31+                dockerhub_user: $DOCKERHUB_USER
31+                dockerhub_pass: $DOCKERHUB_PASS
31+
32+              - name: push_docker
32+                sh "ansible-playbook playbooks/push_dockerhub.yml \
32+                  --extra-vars \"BUILD_ID=$BUILD_ID\" \
32+                  --extra-vars \"dockerhub_user=$dockerhub_user\" \
32+                  --extra-vars \"dockerhub_pass=$dockerhub_pass\""
32+
33+      - name: test
33+        steps:
33+          - name: sonar
33+            sonar_token: $SONAR_TOKEN
33+
34+          - name: copy_jar
34+            steps:
34+              - name: copy_jar
34+                sh "ansible-playbook playbooks/copy_jar.yml"
34+
35+      - name: publish
35+        steps:
35+          - name: push_docker
35+            sh "ansible-playbook playbooks/push_dockerhub.yml \
35+              --extra-vars \"BUILD_ID=$BUILD_ID\" \
35+              --extra-vars \"dockerhub_user=$dockerhub_user\" \
35+              --extra-vars \"dockerhub_pass=$dockerhub_pass\""
35+
36+    
```

Use Groovy Sandbox

Pipeline Syntax

Save Apply

Dashboard > project-1 >

Full Stage View Rename Pipeline Syntax

Build History trend

	CLEAN WORKSPACE	CODE CHECKOUT	MODIFIED IMAGE TAG	BUILD	SONAR SCANNER	COPY JAR & DOCKERFILE	PUSH IMAGE ON DOCKERHUB
Jun 02 15:12	125ms	1s	339ms	9s	23s	6s	41s
Jun 02 15:08	118ms	959ms	363ms	9s	24s	6s	
Jun 02 15:00	151ms	1s	342ms	10s	34s		
Jun 02 14:58	139ms	859ms	371ms	15s			
Jun 02 14:57	152ms	955ms	453ms				
Jun 02 14:55	103ms	1s					
Jun 02 14:52	333ms						

Average stage times: (Average full run time: ~29s)

Docker Hub

Search Docker Hub Explore Repositories Organizations Help

Upgrades mahesh8887

mahesh8887 Using 0 of 1 private repositories Get more

General Tags Builds Collaborators Webhooks Settings

Add a short description for this repository The short description is used to index your content on Docker Hub and in search engines. It's visible to users in search results.

mahesh8887 / project-1

Description This repository does not have a description

Last pushed: a minute ago

Tags This repository contains 2 tag(s).

Tag	OS	Type	Pulled	Pushed
latest		Image	---	a minute ago
v1.7		Image	---	2 minutes ago

See all Go to Advanced Image Management

Decker commands To push a new tag to this repository.

docker push mahesh8887/project-1:tagname

Public View

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. Read more about Automated builds.

Upgrade

Dashboard > project-1 >

Configuration

- General
- Advanced Project Options
- Pipeline**

```

53
54+
55
56
57
58
59
60
61
62+
63+
64
65
66
67
68
69
}
]
stage('DEPLOYMENT ON EKS') {
    steps [
        sh "ansible-playbook playbooks/create_pod_on_eks.yml \
--extra-vars \"BUILD_ID=$BUILD_ID\" \
--extra-vars \"dockerrhub_user=$dockerrhub_user\" \
--extra-vars \"dockerrhub_pass=$dockerrhub_pass\""
    ]
}

```

Use Groovy Sandbox ?

[Pipeline Syntax](#)

Save **Apply**

Docker Hub Search Docker Hub Explore Repositories Organizations Help mahesh8887 Using 0 of 1 private repositories. Get more

General Tags Builds Collaborators Webhooks Settings

Add a short description for this repository. The short description is used to index your content on Docker Hub and in search engines. It's visible to users in search results. **Update**

mahesh8887 / project-1

Description This repository does not have a description.

Decker commands To push a new tag to this repository. **Public View**

docker push mahesh8887/project-1:tagname

Last pushed: a minute ago

Tags This repository contains 3 tag(s).

Tag	OS	Type	Pulled	Pushed
latest	Ubuntu	Image	a minute ago	a minute ago
v1.8	Ubuntu	Image	a minute ago	2 minutes ago
v1.7	Ubuntu	Image	...	7 minutes ago

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. [Read more about automated builds](#).

Upgrade

Jenkins Search (CTRL+K) Mahesh Biradar log out

Dashboard > project-1 >

Pipeline project-1

- Status
- </> Changes
- ▷ Build Now
- Configure
- Delete Pipeline
- Full Stage View
- Rename
- Pipeline Syntax

Stage View

Average stage times: (Average full run time: ~48s)

	CLEAN WORKSPACE	CODE CHECKOUT	MODIFIED IMAGE TAG	BUILD	SONAR SCANNER	COPY JAR & DOCKERFILE	PUSH IMAGE ON DOCKERHUB	DEPLOYMENT ON EKS
Jun 02 15:18	112ms	823ms	333ms	9s	23s	6s	27s	1min 59s
Jun 02 15:12	125ms	1s	339ms	9s	23s	6s	41s	

Build History trend ▾

Filter builds... Jun 2, 2023 - 3:38 PM Jun 2, 2023 - 3:32 PM

Dashboard > project-1 > #8

```

TASK [WAITING FOR GET DEPLOYMENT STATUS] ****
changed: [172.31.14.237]

TASK [STATUS OF DEPLOYMENT] ****
changed: [172.31.14.237]

TASK [PRINT DEPLOYMENT STATUS] ****
ok: [172.31.14.237] => {
    "get_deployment_status.stdout_lines": [
        "NAME          READY   STATUS    RESTARTS   AGE",
        "my-app-6b5f588f66-dz8z5  1/1     Running   0          101s",
        "my-app-6b5f588f66-kvjjl  1/1     Running   0          101s"
    ]
}

PLAY RECAP ****
172.31.14.237 : ok=10  changed=6  unreachable=0  failed=0  skipped=0  rescued=0  ignored=0

[Pipeline]
[Pipeline] // stage
[Pipeline]
[Pipeline] // withEnv
[Pipeline]
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS

```

k8s-master

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Quick connect... 2. jenkins 3. k8s-master 4. sonarque

root@k8s-master:~# kubectl get pod

NAME	READY	STATUS	RESTARTS	AGE
my-app-6b5f588f66-dz8z5	1/1	Running	0	3m25s
my-app-6b5f588f66-kvjjl	1/1	Running	0	3m25s

root@k8s-master:~#

Not secure | 13.251.129.244:30000/webapp/

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welcome to DevOps community

DEVOPS_REAL_TIME_PROJECT

App Status : Up & Running !!!

Image : mahesh8887/project-1:v1.8



Dashboard > project-1 >

	CLEAN WORKSPACE	CODE CHECKOUT	MODIFIED IMAGE TAG	BUILD	SONAR SCANNER	COPY JAR & DOCKERFILE	PUSH IMAGE ON DOCKERHUB	DEPLOYMENT ON EKS
Jun 02 15:18	112ms	823ms	333ms	9s	23s	6s	27s	1min 59s
Jun 02 15:12	125ms	7s	339ms	9s	23s	6s	41s	
Jun 02 15:06	118ms	959ms	363ms	9s	24s	6s		
Jun 02 15:00	151ms	7s	342ms	10s	34s			
Jun 02 14:58	139ms	859ms	371ms	15s				
Jun 02 14:57	152ms	955ms	453ms					

Github integrate with Jenkins.

+++++ GITHUB ACCOUNT

+++++
+++++
+++++

Github > Repository > Settings > Webhooks > Add Webhooks >

Payload UR : http://<jenkins_ip>:8080/github-webhook/

Content type : application/json

Just the push event.

The screenshot shows two screenshots of the GitHub repository settings interface. The top screenshot shows the 'Webhooks / Add webhook' form. The payload URL is set to 'http://13.251.27.188:8080/github-webhook/'. The content type is set to 'application/json'. The secret field is empty. Under 'Which events would you like to trigger this webhook?', the radio button for 'Just the push event.' is selected. The 'Active' checkbox is checked. A green 'Add webhook' button is visible at the bottom. The bottom screenshot shows the 'Webhooks' section of the repository settings, where the previously added webhook is listed with the URL 'http://13.251.27.188:8080/github-w... (push)' and edit and delete buttons.

+++++ JENKINS SERVER

+++++
+++++
+++++

Jenkins > project-1 > Configure > Build Triggers >

GitHub hook trigger for GITScm polling

The screenshot shows the Jenkins project configuration page for 'project-1'. Under the 'Build Triggers' section, the 'GitHub hook trigger for GITScm polling' checkbox is checked. Other options like 'Build after other projects are built', 'Build periodically', 'Poll SCM', 'Quiet period', and 'Trigger builds remotely' are unchecked. The 'General' tab is selected in the sidebar.

The screenshot shows a GitHub commit dialog titled 'Commit changes'. The 'Commit message' field contains the text 'Update index.jsp'. Below it is an 'Extended description' field with the placeholder 'Add an optional extended description..'. At the bottom, there are two radio button options: 'Commit directly to the master branch' (selected) and 'Create a new branch for this commit and start a pull request'. The 'Commit changes...' button is visible at the bottom right.

Screenshot of Docker Hub repository page for 'mahesh8887/project-1'.

Description: This repository does not have a description.

Last pushed: a minute ago

Tags (4 tags):

Tag	OS	Type	Pulled	Pushed
latest		Image	a minute ago	a minute ago
v1.10		Image	a minute ago	a minute ago
v1.8		Image	32 minutes ago	33 minutes ago
v1.7		Image	22 minutes ago	38 minutes ago

Docker commands: docker push mahesh8887/project-1:tagname

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Logs (Deployment status):

```

changed: [172.31.14.237]

TASK [PRINT DEPLOYMENT STATUS] ****
ok: [172.31.14.237] => {
    "get_deployment_status.stdout_lines": [
        "NAME          READY   STATUS    RESTARTS   AGE",
        "my-app-744f7598df-gx4n7  1/1    Running   0          102s",
        "my-app-744f7598df-x6b7l  1/1    Running   0          101s"
    ]
}

PLAY RECAP ****
172.31.14.237 : ok=10  changed=5  unreachable=0  failed=0  skipped=0  rescued=0  ignored=0

[Pipeline]
[Pipeline] // stage
[Pipeline]
[Pipeline] // withEnv
[Pipeline]
[Pipeline] // withEnv
[Pipeline]
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS

```

Bottom Navigation: Dashboard > project-1 > #10

welcome to DevOps community and **Hope you found this useful**

DEVOPS_REAL_TIME_PROJECT

App Status : Up & Running !!!

Image : mahesh8887/project-1:v1.10



```
Not secure | 13.251.27.188:8080/job/project-1/11/console

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Dashboard > project-1 > #11

changed: [172.31.14.237]

TASK [PRINT DEPLOYMENT STATUS] ****
ok: [172.31.14.237] => {
    "get_deployment_status.stdout_lines": [
        "NAME                  READY   STATUS    RESTARTS   AGE",
        "'my-app-6d88f5f8fd-hktn5'  1/1     Running   0          101s",
        "'my-app-6d88f5f8fd-pktjm' 1/1     Running   0          101s"
    ]
}

PLAY RECAP ****
172.31.14.237 : ok=10  changed=5  unreachable=0  failed=0  skipped=0  rescued=0  ignored=0

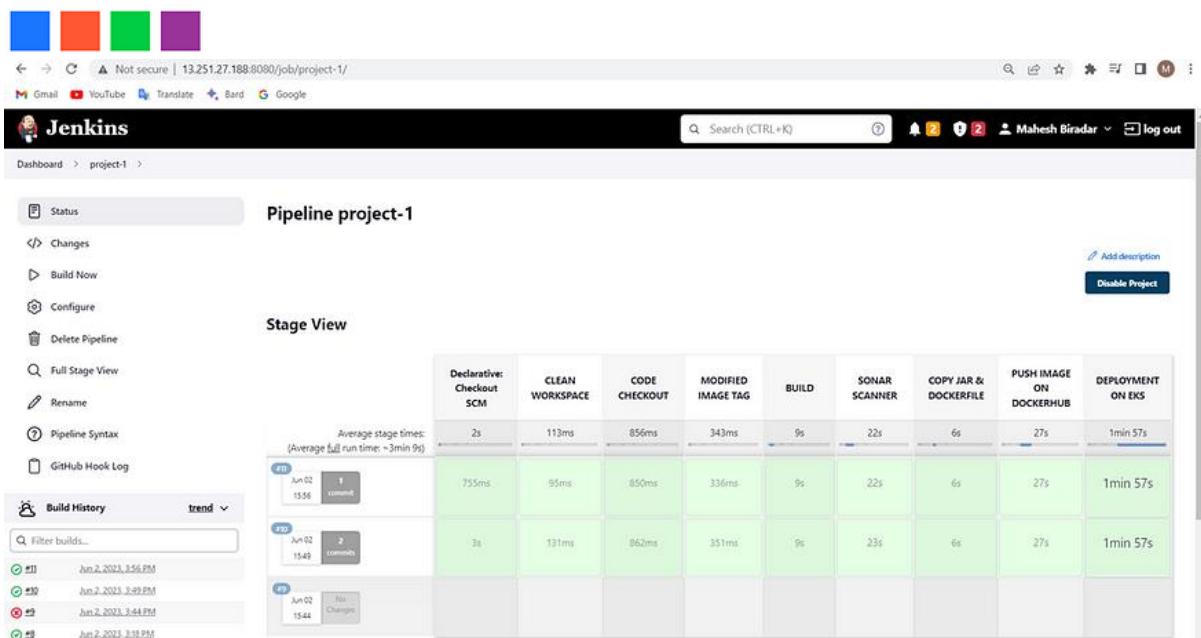
[Pipeline]
[Pipeline] // stage
[Pipeline]
[Pipeline] // withEnv
[Pipeline]
[Pipeline] // withEnv
[Pipeline]
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

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DEVOPS_REAL_TIME_PROJECT

App Status : Up & Running !!!

Image : mahesh8887/project-1:v1.11



Add a short description for this repository
The short description is used to index your content on Docker Hub and in search engines. It's visible to users in search results.

mahesh8887 / project-1

Description
This repository does not have a description

Last pushed: 5 minutes ago

Docker commands
To push a new tag to this repository.
docker push mahesh8887/project-1:tagname

Tags

Tag	OS	Type	Pulled	Pushed
latest		Image	5 minutes ago	5 minutes ago
v1.11		Image	5 minutes ago	5 minutes ago
v1.10		Image	11 minutes ago	12 minutes ago
v1.8		Image	43 minutes ago	43 minutes ago

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. [Read more about automated builds](#).

References

Github: https://github.com/Mahesh8887/devops_real_time_project_1.git

Thank you

By completing this exercise, you will gain a comprehensive understanding of the complete CI pipeline of Jenkins, specifically for java base web applications. The pipeline integrates several tools such as GitHub, Maven, Docker Hub, and SonarQube. Furthermore, Kubernetes are utilized to enable continuous delivery (CD).

Hope you found this useful. Follow me for projects and more content on DevOps.

Thank you

