

## 1. Update Ubuntu

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
```

```
surajsavji@surajsavji-VirtualBox:~/Desktop$ sudo apt-get update
[sudo] password for surajsavji:
Sorry, try again.
[sudo] password for surajsavji:
Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://security.ubuntu.com/ubuntu focal-security InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease
Reading package lists... Done
```

## 2. Install Java

```
surajsavji@surajsavji-VirtualBox:~/Desktop$ sudo apt install default-jdk
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi libgstreamer-plugins-bad1.0-0 libva-wayland2
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  ca-certificates-java default-jdk-headless default-jre default-jre-headless fonts-dejavu-extra
  java-common libatk-wrapper-java libatk-wrapper-java-jni libice-dev libpthread-stubs0-dev
  libsm-dev libx11-6 libx11-dev libxau-dev libxcb1-dev libxdmcp-dev libxt-dev openjdk-11-jdk
  openjdk-11-jdk-headless openjdk-11-jre openjdk-11-jre-headless x11proto-core-dev x11proto-dev
  xorg-sgml-doctools xtrans-dev
Suggested packages:
  libice-doc libsm-doc libx11-doc libxcb-doc libxt-doc openjdk-11-demo openjdk-11-source visualvm
  fonts-ipafont-gothic fonts-ipafont-mincho fonts-wqy-microhei | fonts-wqy-zenhei
The following NEW packages will be installed:
  ca-certificates-java default-jdk default-jdk-headless default-jre default-jre-headless
  fonts-dejavu-extra java-common libatk-wrapper-java libatk-wrapper-java-jni libice-dev
  libpthread-stubs0-dev libsm-dev libx11-dev libxau-dev libxcb1-dev libxdmcp-dev libxt-dev
  openjdk-11-jdk openjdk-11-jdk-headless openjdk-11-jre openjdk-11-jre-headless x11proto-core-dev
  x11proto-dev xorg-sgml-doctools xtrans-dev
```

## 3. Add User-Group and User for Hadoop

```
surajsavji@surajsavji-VirtualBox:~/Desktop$ sudo addgroup hadoop
Adding group 'hadoop' (GID 1001) ...
Done.
surajsavji@surajsavji-VirtualBox:~/Desktop$ sudo adduser --ingroup hadoop hdp123
Adding user 'hdp123' ...
Adding new user 'hdp123' (1001) with group 'hadoop' ...
Creating home directory '/home/hdp123' ...
Copying files from '/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for hdp123
Enter the new value, or press ENTER for the default
  Full Name []:
  Room Number []:
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [Y/n] Y
surajsavji@surajsavji-VirtualBox:~/Desktop$ sudo adduser hdp123 sudo
Adding user 'hdp123' to group 'sudo' ...
Adding user hdp123 to group sudo
Done.
```

## 4. Install openssh-server

```
surajsavji@surajsavji-VirtualBox:~/Desktop$ sudo apt install openssh-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi libgstreamer-plugins-bad1.0-0 libva-wayland2
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  ncurses-term openssh-client openssh-sftp-server ssh-import-id
Suggested packages:
  keychain libpam-ssh monkeysphere ssh-askpass molly-guard
The following NEW packages will be installed:
  ncurses-term openssh-server openssh-sftp-server ssh-import-id
The following packages will be upgraded:
  openssh-client
1 upgraded, 4 newly installed, 0 to remove and 509 not upgraded.
Need to get 1,359 kB of archives.
After this operation, 6,010 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-client amd64 1:8.2p1-4ubuntu0.5 [671 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu focal/main amd64 ncurses-term all 6.2-0ubuntu2 [249 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-sftp-server amd64 1:8.2p1-4ubuntu0.5 [51.5 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-server amd64 1:8.2p1-4ubuntu0.5 [377 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu focal/main amd64 ssh-import-id all 5.10-0ubuntu1 [10.0 kB]
Fetched 1,359 kB in 3s (429 kB/s)
Preconfiguring packages ...
(Reading database ... 182240 files and directories currently installed.)
Preparing to unpack .../openssh-client_1%3a8.2p1-4ubuntu0.5_amd64.deb ...
Unpacking openssh-client (1:8.2p1-4ubuntu0.5) over (1:8.2p1-4ubuntu0.1) ...
```

## 5. Change User

```
surajsavji@surajsavji-VirtualBox:~/Desktop$ su hdp123
Password:
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
```

## 6. Generate key

```
hdp123@surajsavji-VirtualBox:/home/surajsavji/Desktop$ ssh-keygen -t rsa -P ""
Generating public/private rsa key pair.
Enter file in which to save the key (/home/hdp123/.ssh/id_rsa):
Created directory '/home/hdp123/.ssh'.
Your identification has been saved in /home/hdp123/.ssh/id_rsa
Your public key has been saved in /home/hdp123/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:qoEYkDI4ambvjKmwIXgtvJ3IU9UBWwOY3WqGrRT7D9w hdp123@surajsavji-VirtualBox
The key's randomart image is:
+---[RSA 3072]-----+
|.. . =+=+..|
|=+ * .oo.|
|O+ * *..|
|*O= * =|
|+= o * .S|
|++... +.E|
|o ... .o|
|.o o .|
|.oo.|
+----[SHA256]-----+
```



```

hdp123@surajsavji-VirtualBox:/home/surajsavji/Desktop$ cat $HOME/.ssh/id_rsa.pub >> $HOME/.ssh/authorized_keys
hdp123@surajsavji-VirtualBox:/home/surajsavji/Desktop$ chmod 640 ~/.ssh/authorized_keys
hdp123@surajsavji-VirtualBox:/home/surajsavji/Desktop$ ssh localhost
The authenticity of host 'localhost (127.0.0.1)' can't be established.
ECDSA key fingerprint is SHA256:/xGD22HPMxD+N4mj0/CvoqEiY3h2KGZdZb+PT5xlmts.
Are you sure you want to continue connecting (yes/no/[fingerprint])?
Host key verification failed.
hdp123@surajsavji-VirtualBox:/home/surajsavji/Desktop$ ssh localhost
The authenticity of host 'localhost (127.0.0.1)' can't be established.
ECDSA key fingerprint is SHA256:/xGD22HPMxD+N4mj0/CvoqEiY3h2KGZdZb+PT5xlmts.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'localhost' (ECDSA) to the list of known hosts.
Enter passphrase for key '/home/hdp123/.ssh/id_rsa':
hdp123@localhost's password:
Welcome to Ubuntu 20.04.2 LTS (GNU/Linux 5.15.0-69-generic x86_64)

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

519 updates can be installed immediately.
358 of these updates are security updates.
To see these additional updates run: apt list --upgradable

Your Hardware Enablement Stack (HWE) is supported until April 2025.

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.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

```

## 7. Download and open tar file

```

hadoop-2.10.1/share/hadoop/tools/sls/html/js/thirdparty/jquery.js
hadoop-2.10.1/share/hadoop/tools/sls/html/simulate.info.html.template
hadoop-2.10.1/share/hadoop/tools/sls/html/track.html.template
hadoop-2.10.1/share/hadoop/tools/sls/html/showSimulationTrace.html
hadoop-2.10.1/share/hadoop/tools/sls/html/simulate.html.template
hadoop-2.10.1/share/hadoop/tools/sls/sample-conf/
hadoop-2.10.1/share/hadoop/tools/sls/sample-conf/capacity-scheduler.xml
hadoop-2.10.1/share/hadoop/tools/sls/sample-conf/fair-scheduler.xml
hadoop-2.10.1/share/hadoop/tools/sls/sample-conf/log4j.properties
hadoop-2.10.1/share/hadoop/tools/sls/sample-conf/sls-runner.xml
hadoop-2.10.1/share/hadoop/tools/sls/sample-conf/yarn-site.xml
hadoop-2.10.1/share/hadoop/tools/sls/sample-data/
hadoop-2.10.1/share/hadoop/tools/sls/sample-data/2jobs2min-rumen-jh.json
hadoop-2.10.1/include/
hadoop-2.10.1/include/hdfs.h
hadoop-2.10.1/include/Pipes.hh
hadoop-2.10.1/include/TemplateFactory.hh
hadoop-2.10.1/include/StringUtils.hh
hadoop-2.10.1/include/SerialUtils.hh
hadoop-2.10.1/LICENSE.txt
hadoop-2.10.1/NOTICE.txt
hdp123@surajsavji-VirtualBox:/home/surajsavji/Downloads$ sudo tar -xzf hadoop-2.10.1.tar.gz
hdp123@surajsavji-VirtualBox:/home/surajsavji/Downloads$ sudo mv hadoop-2.10.1 /usr/local/hadoop
hdp123@surajsavji-VirtualBox:/home/surajsavji/Downloads$ sudo chown -R hadoop /usr/local
chown: invalid user: 'hadoop'
hdp123@surajsavji-VirtualBox:/home/surajsavji/Downloads$ sudo chown -R hdp123 /usr/local
hdp123@surajsavji-VirtualBox:/home/surajsavji/Downloads$

```

## 8. Open and edit bashrc file

```

GNU nano 4.8 /home/hdp123/.bashrc Modified
test -r ~/.dircolors && eval "$(dircolors -b ~/.dircolors)" || eval "$(dircolors -b)"
alias ls='ls --color=auto'
#alias dir='dir --color=auto'
#alias vdir='vdir --color=auto'

alias grep='grep --color=auto'
alias fgrep='fgrep --color=auto'
alias egrep='egrep --color=auto'
fi

# colored GCC warnings and errors
#export GCC_COLORS='error=01;31:warning=01;35:note=01;36:caret=01;32:locus=01:quote=01'

# some more ls aliases
alias ll='ls -alF'
alias la='ls -A'
alias l='ls -CF'

# Add an "alert" alias for long running commands.  Use like so:
# sleep 10; alert
alias alert='notify-send --urgency=low -i "${[ $? = 0 ]} && echo terminal || echo error)" "${history}|'

# 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.bashrc).
if ! shopt -oq posix; then
if [ -f /usr/share/bash-completion/bash_completion ]; then
. /usr/share/bash-completion/bash_completion
elif [ -f /etc/bash_completion ]; then
. /etc/bash_completion
fi
fi

export JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64
export HADOOP_HOME=/usr/local/hadoop
export PATH=$PATH:$HADOOP_HOME/bin
export PATH=$PATH:$HADOOP_HOME/sbin
export HADOOP_MAPRED_HOME=$HADOOP_HOME
export HADOOP_COMMON_HOME=$HADOOP_HOME
export HADOOP_HDFS_HOME=$HADOOP_HOME
export YARN_HOME=$HADOOP_HOME
export HADOOP_COMMON_LIB_NATIVE_DIR=$HADOOP_HOME/native
export HADOOP_OPTS="-Djava.library.path=$HADOOP_HOME/native"
Cancelled
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos M-U Undo
^X Exit ^R Read File ^\ Replace ^U Paste Text ^T To Spell ^_ Go To Line M-E Redo

```

```

hdp123@surajsavji-VirtualBox:~$ sudo nano ~/.bashrc
hdp123@surajsavji-VirtualBox:~$

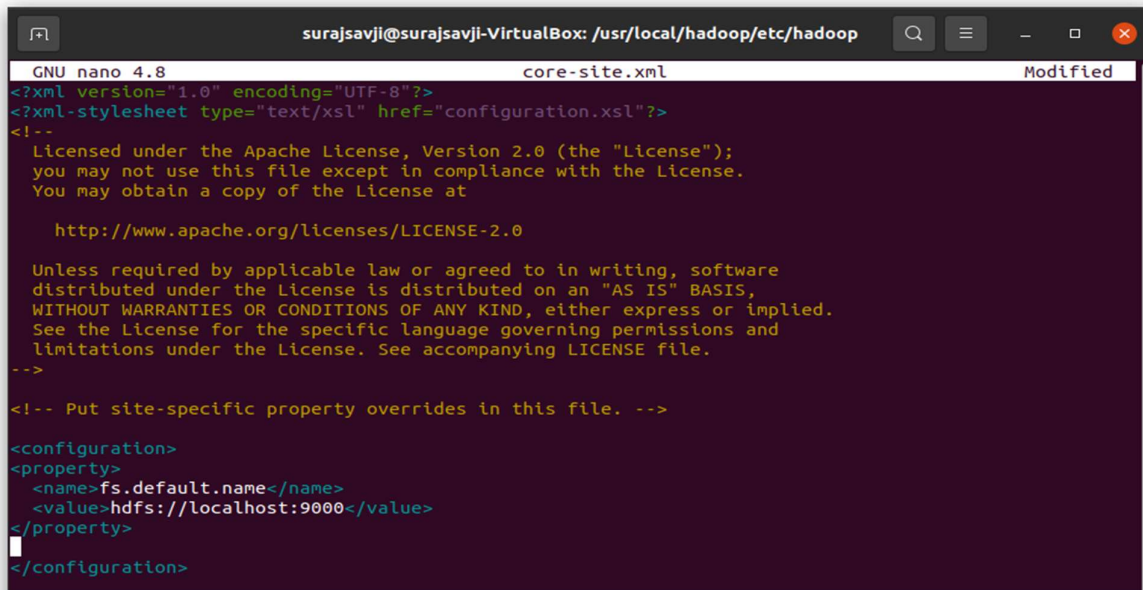
```

## 9. Open and edit Required files

```

surajsavji@surajsavji-VirtualBox: /usr/local/hadoop/etc/hadoop$ sudo nano core-site.xml
[sudo] password for surajsavji:
S Thunderbird Mail for surajsavji:
surajsavji@surajsavji-VirtualBox: /usr/local/hadoop/etc/hadoop$ sudo nano hdfs-site.xml
surajsavji@surajsavji-VirtualBox: /usr/local/hadoop/etc/hadoop$ sudo nano yarn-site.xml
surajsavji@surajsavji-VirtualBox: /usr/local/hadoop/etc/hadoop$ sudo nano mapred-site.xml
surajsavji@surajsavji-VirtualBox: /usr/local/hadoop/etc/hadoop$ sudo mkdir -p /usr/local/hadoop_space
surajsavji@surajsavji-VirtualBox: /usr/local/hadoop/etc/hadoop$ sudo mkdir -p /usr/local/hadoop_space/
hdfs/namenode
surajsavji@surajsavji-VirtualBox: /usr/local/hadoop/etc/hadoop$ sudo mkdir -p /usr/local/hadoop_space/
hdfs/datanode
surajsavji@surajsavji-VirtualBox: /usr/local/hadoop/etc/hadoop$ sudo chown -R hdp123 /usr/local/hadoop
p_space

```



```

GNU nano 4.8 core-site.xml Modified
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/xsl" href="configuration.xsl"?>
<!--
Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

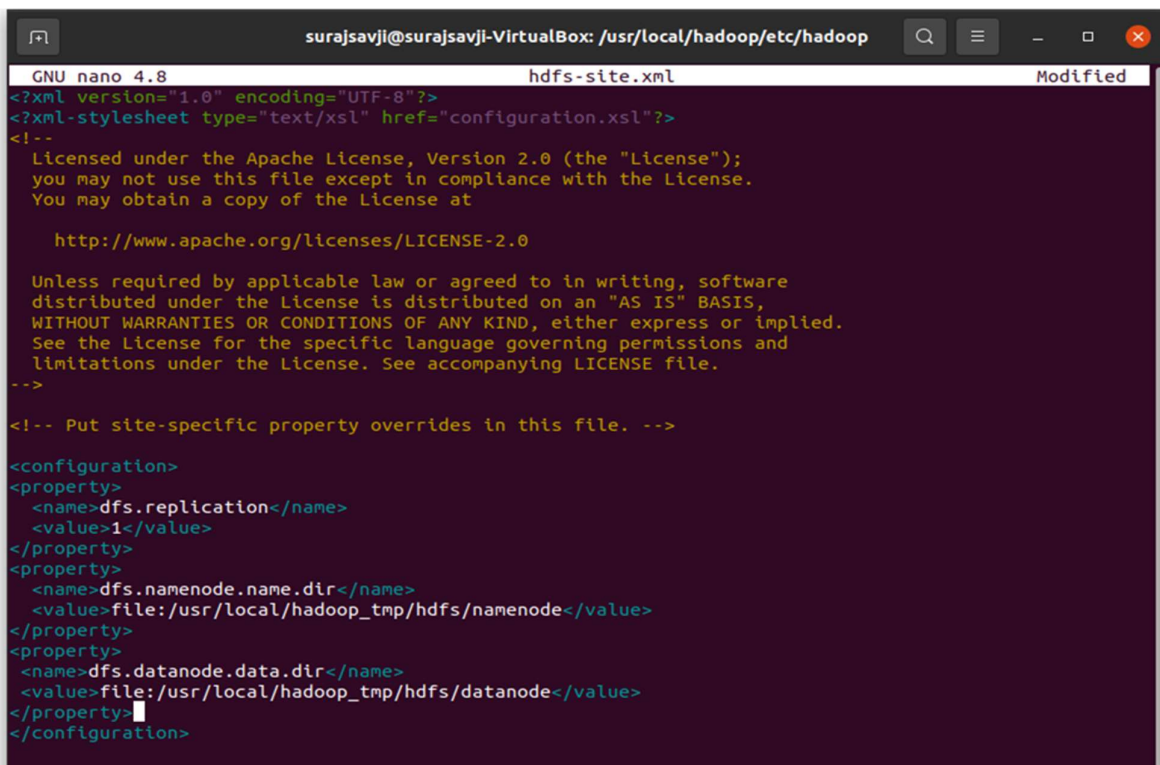
    http://www.apache.org/licenses/LICENSE-2.0

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distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the license for the specific language governing permissions and
limitations under the License. See accompanying LICENSE file.
-->

<!-- Put site-specific property overrides in this file. -->

<configuration>
<property>
  <name>fs.default.name</name>
  <value>hdfs://localhost:9000</value>
</property>
</configuration>

```



```

GNU nano 4.8 hdfs-site.xml Modified
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/xsl" href="configuration.xsl"?>
<!--
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you may not use this file except in compliance with the License.
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    http://www.apache.org/licenses/LICENSE-2.0

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WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the license for the specific language governing permissions and
limitations under the License. See accompanying LICENSE file.
-->

<!-- Put site-specific property overrides in this file. -->

<configuration>
<property>
  <name>dfs.replication</name>
  <value>1</value>
</property>
<property>
  <name>dfs.namenode.name.dir</name>
  <value>file:/usr/local/hadoop_tmp/hdfs/namenode</value>
</property>
<property>
  <name>dfs.datanode.data.dir</name>
  <value>file:/usr/local/hadoop_tmp/hdfs/datanode</value>
</property>
</configuration>

```



```

surajsavji@surajsavji-VirtualBox: /usr/local/hadoop/etc/hadoop
GNU nano 4.8                                yarn-site.xml                                Modified
<?xml version="1.0"?>
<!--
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you may not use this file except in compliance with the License.
You may obtain a copy of the License at

    http://www.apache.org/licenses/LICENSE-2.0

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distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License. See accompanying LICENSE file.

-->

<configuration>
<property>
  <name>yarn.nodemanager.aux-services</name>
  <value>mapreduce_shuffle</value>
</property>
<property>
  <name>yarn.nodemanager.aux-services.mapreduce.shuffle.class</name>
  <value>org.apache.hadoop.mapred.ShuffleHandler</value>
</property>
<!-- Site specific YARN configuration properties -->
</configuration>

```

```

surajsavji@surajsavji-VirtualBox: /usr/local/hadoop/etc/hadoop
GNU nano 4.8                                mapred-site.xml                                Modified
<property>
  <name>mapreduce.framework.name</name>
  <value>yarn</value>
</property>

```

## 10. Running Required commands

```

hdp123@surajsavji-VirtualBox:/home/surajsavji/Downloads$ jps
9885 Jps
hdp123@surajsavji-VirtualBox:/home/surajsavji/Downloads$
Message from syslogd@surajsavji-VirtualBox at Apr 16 21:56:23 ...
kernel:[ 6815.564969] watchdog: BUG: soft lockup - CPU#1 stuck for 379s! [swapper/1:0]

hdp123@surajsavji-VirtualBox:/home/surajsavji/Downloads$ sudo mkdir -p /usr/local/hadoop_space
[sudo] password for hdp123:
hdp123@surajsavji-VirtualBox:/home/surajsavji/Downloads$ ^C
hdp123@surajsavji-VirtualBox:/home/surajsavji/Downloads$ sudo mkdir -p /usr/local/hadoop_space/hdfs/n
amenode
hdp123@surajsavji-VirtualBox:/home/surajsavji/Downloads$ sudo mkdir -p /usr/local/hadoop_space/hdfs/n
amenode
hdp123@surajsavji-VirtualBox:/home/surajsavji/Downloads$ sudo chown -R hdp123 /usr/local/

```

```

hdp123@surajsavji-VirtualBox:~$ hdfs namenode -format
23/04/16 23:06:09 INFO namenode.NameNode: STARTUP_MSG:
/*****
STARTUP_MSG: Starting NameNode
STARTUP_MSG:   host = surajsavji-VirtualBox/127.0.1.1
STARTUP_MSG:   args = [-format]
STARTUP_MSG:   version = 2.10.1
STARTUP_MSG:   classpath = /usr/local/hadoop/etc/hadoop:/usr/local/hadoop/share/hadoop/common/lib/slf
4j-api-1.7.25.jar:/usr/local/hadoop/share/hadoop/common/lib/curator-framework-2.13.0.jar:/usr/local/h
adoop/share/hadoop/common/lib/commons-lang-2.6.jar:/usr/local/hadoop/share/hadoop/common/lib/commons-
io-2.4.jar:/usr/local/hadoop/share/hadoop/common/lib/commons-codec-1.4.jar:/usr/local/hadoop/share/ha
adoop/common/lib/jetty-util-6.1.26.jar:/usr/local/hadoop/share/hadoop/common/lib/commons-configuration
-1.6.jar:/usr/local/hadoop/share/hadoop/common/lib/mockito-all-1.8.5.jar:/usr/local/hadoop/share/ha
adoop/common/lib/netty-3.10.6.Final.jar:/usr/local/hadoop/share/hadoop/common/lib/apacheds-i18n-2.0.0-M1
5.jar:/usr/local/hadoop/share/hadoop/common/lib/log4j-1.2.17.jar:/usr/local/hadoop/share/hadoop/commo
n/lib/apacheds-kerberos-codec-2.0.0-M15.jar:/usr/local/hadoop/share/hadoop/common/lib/nimbus-jose-jwt
-7.9.jar:/usr/local/hadoop/share/hadoop/common/lib/jaxb-impl-2.2.3-1.jar:/usr/local/hadoop/share/ha
adoop/common/lib/httpclient-4.5.2.jar:/usr/local/hadoop/share/hadoop/common/lib/avro-1.7.7.jar:/usr/loca
l/hadoop/share/hadoop/common/lib/activation-1.1.jar:/usr/local/hadoop/share/hadoop/common/lib/httpcor
e-4.4.4.jar:/usr/local/hadoop/share/hadoop/common/lib/hadoop-auth-2.10.1.jar:/usr/local/hadoop/share/
hadoop/common/lib/jets3t-0.9.0.jar:/usr/local/hadoop/share/hadoop/common/lib/jetty-6.1.26.jar:/usr/lo
cal/hadoop/share/hadoop/common/lib/guava-11.0.2.jar:/usr/local/hadoop/share/hadoop/common/lib/xmlenc
-0.52.jar:/usr/local/hadoop/share/hadoop/common/lib/commons-compress-1.19.jar:/usr/local/hadoop/share/
hadoop/common/lib/hadoop-annotations-2.10.1.jar:/usr/local/hadoop/share/hadoop/common/lib/jackson-ys

```

## 11. Starting dfs.sh and yarn.sh

```

hdp123@surajsavji-VirtualBox:~$ start-dfs.sh
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by org.apache.hadoop.security.authentication.util.KerberosUtil (fi
le:/usr/local/hadoop/share/hadoop/common/lib/hadoop-auth-2.10.1.jar) to method sun.security.krb5.Conf
ig.getInstance()
WARNING: Please consider reporting this to the maintainers of org.apache.hadoop.security.authenticati
on.util.KerberosUtil
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
23/04/16 23:16:44 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform.
.. using builtin-java classes where applicable
Starting namenodes on [localhost]
Enter passphrase for key '/home/hdp123/.ssh/id_rsa':
hdp123@localhost's password:
localhost: starting namenode, logging to /usr/local/hadoop/logs/hadoop-hdp123-namenode-surajsavji-Vir
tualBox.out
localhost: WARNING: An illegal reflective access operation has occurred
localhost: WARNING: Illegal reflective access by org.apache.hadoop.security.authentication.util.Kerbe
rosUtil (file:/usr/local/hadoop/share/hadoop/common/lib/hadoop-auth-2.10.1.jar) to method sun.securit
y.krb5.Config.getInstance()
localhost: WARNING: Please consider reporting this to the maintainers of org.apache.hadoop.security.a
uthentication.util.KerberosUtil
localhost: WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access
operations

```

```

hdp123@surajsavji-VirtualBox:~$ start-yarn.sh
starting yarn daemons
resourcemanager running as process 13564. Stop it first.
Enter passphrase for key '/home/hdp123/.ssh/id_rsa':
hdp123@localhost's password:
localhost: starting nodemanager, logging to /usr/local/hadoop/logs/yarn-hdp123-nodemanager-surajsavji
-VirtualBox.out
localhost: WARNING: An illegal reflective access operation has occurred
localhost: WARNING: Illegal reflective access by org.apache.hadoop.security.authentication.util.Kerbe
rosUtil (file:/usr/local/hadoop/share/hadoop/common/lib/hadoop-auth-2.10.1.jar) to method sun.securit
y.krb5.Config.getInstance()
localhost: WARNING: Please consider reporting this to the maintainers of org.apache.hadoop.security.a
uthentication.util.KerberosUtil
localhost: WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access
operations
localhost: WARNING: All illegal access operations will be denied in a future release
hdp123@surajsavji-VirtualBox:~$ jps
14340 SecondaryNameNode
14601 NodeManager
13963 NameNode
14139 DataNode
13564 ResourceManager
14718 Jps

```

## 12. Hadoop Version

```
hdp123@surajsavji-VirtualBox:~$ hadoop version
Hadoop 2.10.1
Subversion https://github.com/apache/hadoop -r 1827467c9a56f133025f28557bfc2c562d78e816
Compiled by centos on 2020-09-14T13:17Z
Compiled with protoc 2.5.0
From source with checksum 3114edef868f1f3824e7d0f68be03650
This command was run using /usr/local/hadoop/share/hadoop/common/hadoop-common-2.10.1.jar
```