

## Installing Java

**root@admin:~\$ sudo apt-get update**

[sudo] password for admin:

Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease  
Hit:2 https://download.docker.com/linux/ubuntu focal InRelease  
Hit:3 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease  
Hit:4 http://security.ubuntu.com/ubuntu focal-security InRelease  
Hit:5 https://dl.google.com/linux/chrome/deb stable InRelease  
Hit:6 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease  
Ign:7 https://storage.googleapis.com/download.dartlang.org/linux/debian stable InRelease  
Hit:8 https://storage.googleapis.com/download.dartlang.org/linux/debian stable Release  
Hit:10 https://ftp.postgresql.org/pub/pgadmin/pgadmin4/apt/focal pgadmin4 InRelease  
Hit:11 https://packages.microsoft.com/ubuntu/21.04/prod hirsute InRelease

Reading package lists... Done

**root@admin:~\$ sudo apt-get install default-jdk**

Reading package lists... Done

Building dependency tree

Reading state information... Done

default-jdk is already the newest version (2:1.11-72).

0 upgraded, 0 newly installed, 0 to remove and 154 not upgraded.

**root@admin:~\$ java -version**

openjdk version "11.0.13" 2021-10-19

OpenJDK Runtime Environment (build 11.0.13+8-Ubuntu-0ubuntu1.20.04)

OpenJDK 64-Bit Server VM (build 11.0.13+8-Ubuntu-0ubuntu1.20.04, mixed mode, sharing)

## Create User for Hadoop

**root@admin:~\$ sudo addgroup hadoop**

Adding group `hadoop' (GID 1001) ...

Done.

**root@admin:~\$ sudo adduser --ingroup hadoop hduser**

Adding user `hduser' ...

Adding new user `hduser' (1001) with group `hadoop' ...

Creating home directory `/home/hduser' ...

Copying files from `/etc/skel' ...

New password:

Retype new password:

passwd: password updated successfully

Changing the user information for hduser

Enter the new value, or press ENTER for the default

Full Name []: Hadoop User

Room Number []:

Work Phone []:

Home Phone []:

Other []:

Is the information correct? [Y/n] y

**root@admin:~\$ sudo adduser hduser sudo**

Adding user `hduser' to group `sudo' ...

Adding user hduser to group sudo

Done.

**root@admin:~\$ sudo apt-get install openssh-server**

Reading package lists... Done

Building dependency tree

Reading state information... Done

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 153 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>

1:8.2p1-4ubuntu0.4 [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 1:8.2p1-4ubuntu0.4> [51.5 kB]

Get:4 <http://in.archive.ubuntu.com/ubuntu/focal-updates/main amd64 openssh-server amd64 1:8.2p1-4ubuntu0.4> [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 (463 kB/s)

Preconfiguring packages ...

(Reading database ... 282185 files and directories currently installed.)

Preparing to unpack .../openssh-client\_1%3a8.2p1-4ubuntu0.4\_amd64.deb ...

Unpacking openssh-client (1:8.2p1-4ubuntu0.4) over (1:8.2p1-4ubuntu0.3) ...

Selecting previously unselected package ncurses-term.

Preparing to unpack .../ncurses-term\_6.2-0ubuntu2\_all.deb ...

Unpacking ncurses-term (6.2-0ubuntu2) ...

Selecting previously unselected package openssh-sftp-server.

```
Preparing to unpack .../openssh-sftp-server_1%3a8.2p1-4ubuntu0.4_amd64.deb ...
Unpacking openssh-sftp-server (1:8.2p1-4ubuntu0.4) ...
Selecting previously unselected package openssh-server.
Preparing to unpack .../openssh-server_1%3a8.2p1-4ubuntu0.4_amd64.deb ...
Unpacking openssh-server (1:8.2p1-4ubuntu0.4) ...
Selecting previously unselected package ssh-import-id.
Preparing to unpack .../ssh-import-id_5.10-0ubuntu1_all.deb ...
Unpacking ssh-import-id (5.10-0ubuntu1) ...
Setting up openssh-client (1:8.2p1-4ubuntu0.4) ...
Setting up ssh-import-id (5.10-0ubuntu1) ...
Attempting to convert /etc/ssh/ssh_import_id
Setting up ncurses-term (6.2-0ubuntu2) ...
Setting up openssh-sftp-server (1:8.2p1-4ubuntu0.4) ...
Setting up openssh-server (1:8.2p1-4ubuntu0.4) ...

Creating config file /etc/ssh/sshd_config with new version
Creating SSH2 RSA key; this may take some time ...
3072 SHA256:7X56Fw16K4PffAO1J7247HgJ4PstWP09z31fa2fJ6UU root@admin (RSA)
Creating SSH2 ECDSA key; this may take some time ...
256 SHA256:JRmlZTIOMr6cJvOI86ZEt/cJSORzXZe0SALUZ/fzCFY root@admin (ECDSA)
Creating SSH2 ED25519 key; this may take some time ...
256 SHA256:w8RR8BhWkmiK8vA2D3olunWOs7LHNNm48pqTsE4Kx4g root@admin
(ED25519)
Created symlink /etc/systemd/system/sshd.service → /lib/systemd/system/ssh.service.
Created symlink /etc/systemd/system/multi-user.target.wants/ssh.service →
/lib/systemd/system/ssh.service.
rescue-ssh.target is a disabled or a static unit, not starting it.
Processing triggers for systemd (245.4-4ubuntu3.15) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for ufw (0.36-6ubuntu1) ...
```

## Installing SSH (secure shell)

```
hduser@admin:/home/admin$ sudo apt-get install openssh-server
[sudo] password for hduser:
Reading package lists... Done
Building dependency tree
Reading state information... Done
openssh-server is already the newest version (1:8.2p1-4ubuntu0.4).
0 upgraded, 0 newly installed, 0 to remove and 153 not upgraded.
```

## Create and Setup SSH Certificates

```
hduser@admin:/home/admin$ ssh-keygen -t rsa -P ""
```

Generating public/private rsa key pair.

Enter file in which to save the key (/home/hduser/.ssh/id\_rsa):

Created directory '/home/hduser/.ssh'.

Your identification has been saved in /home/hduser/.ssh/id\_rsa

Your public key has been saved in /home/hduser/.ssh/id\_rsa.pub

The key fingerprint is:

SHA256:H43FUxQFRecsDpjvrTQWkYi9U5reYtQrBd1wew9sUus hduser@admin

The key's randomart image is:

```
+----[RSA 3072]-----+
```

```
|      ..B*|=|  
|      o * O =.|  
|      . * @ O +|  
|      % O +.|  
|      S O * E .|  
|      + * + |  
|      * B . |  
|      . = o |  
|      . |
```

```
+-----[SHA256]-----+
```

```
hduser@admin:/home/admin$ cat $HOME/.ssh/id_rsa.pub >>
```

```
$HOME/.ssh/authorized_keys
```

```
hduser@admin:/home/admin$ ssh localhost
```

The authenticity of host 'localhost (127.0.0.1)' can't be established.

ECDSA key fingerprint is SHA256:JRmlZTIOMr6cJvOI86ZEt/cJSORzXZe0SALUZ/fzCFY.

Are you sure you want to continue connecting (yes/no/[fingerprint])? y

Please type 'yes', 'no' or the fingerprint: yes

Warning: Permanently added 'localhost' (ECDSA) to the list of known hosts.

Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 5.13.0-30-generic x86\_64)

\* Documentation: <https://help.ubuntu.com>

\* Management: <https://landscape.canonical.com>

\* Support: <https://ubuntu.com/advantage>

145 updates can be applied immediately.

98 of these updates are standard security updates.

To see these additional updates run: `apt list --upgradable`

2 updates could not be installed automatically. For more details,

see `/var/log/unattended-upgrades/unattended-upgrades.log`

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.

## Install Hadoop

```
root@admin:~$ wget https://dlcdn.apache.org/hadoop/common/hadoop-3.3.2/hadoop-3.3.2.tar.gz
```

```
hduser@admin:~$ tar xyvf hadoop-3.3.2
```

```
hduser@admin:~$ vi .bashrc
```

```
hduser@admin:~$ source .bashrc
```

```
root@admin:~$ cd /usr/local/hadoop/etc/hadoop
```

```
root@admin:/usr/local/hadoop/etc/hadoop$ vi hadoop-env.sh
```

```
root@admin:/usr/local/hadoop/etc/hadoop$ vi core-site.xml
```

```
root@admin:/usr/local/hadoop/etc/hadoop$ sudo vi hdfs-site.xml
```

```
[sudo] password for admin:
```

```
root@admin:/usr/local/hadoop/etc/hadoop$ sudo vi yarn-site.xml
```

```
root@admin:/usr/local/hadoop/etc/hadoop$ sudo vi mapred-site.xml
```

```
root@admin:/usr/local/hadoop/etc/hadoop$ cd ~
```

```
root@admin:~$ sudo mkdir -p /usr/local/hadoop_tmp
```

```
root@admin:~$ sudo mkdir -p /usr/local/hadoop_tmp/hdfs/namenode
```

```
root@admin:~$ sudo mkdir -p /usr/local/hadoop_tmp/hdfs/datanode
```

```
root@admin:~$ sudo chown -R hduser /usr/local/hadoop_tm
```

```
root@admin:~$ su hduser
```

```
password:
```

```
hduser@admin:~$ hdfs namenode - format
```

```
WARNING: /home/hdoop/hadoop-3.2.1/logs does not exist. Creating.
```

```
2020-04-23 06:08:13, 322 INFO namenode. NameNode: STARTUP MSG:
```

```
/*****
```

```
STARTUP_MSG: Starting NameNode
```

```
STARTUP_MSG: host = nnap-VirtualBox/127.0.1.1 STARTUP_MSG: args = [-format]
```

```
STARTUP_MSG: version = 3.2.1
```

```
STARTUP MSG: classpath = /home/hdoop/hadoop-3.2.1/etc/hadoop:/home/hdoop/hadoop-
```

```
3.2.1/ hare/hadoop/common/lib/httpcore-4.4.10.jar:/home/hdoop/hadoop-
```

```
3.2.1/share/hadoop/common/ ib/curator-recipes -2.13.0.jar:/home/hdoop/hadoop-
```

```
3.2.1/share/hadoop/common/lib/kerby-asn 2020-04-23 06:08:17,966 INFO
```

```
namenode.NNStorageRetentionManager: Going to retain 1 images
```

```
with txid >= 0
```

2020-04-23 06:08:18,036 INFO namenode.FSImage: FSImageSaver clean checkpoint: txid=0  
where meet shutdown.

2020-04-23 06:08:18,036 INFO namenode.NameNode: SHUTDOWN\_MSG:

/\*\*\*\*\*

SHUTDOWN\_MSG: shutting down NameNode at pnap-VirtualBox/127.0.1.1

/\*\*\*\*\*

**hduser@admin:~\$ start-dfs.sh**

Starting namenodes on [localhost]

Starting datanodes

Starting secondary namenodes

**hduser@admin:~\$ ./start-yarn.sh**

Starting resourcemanager

Starting nodemanagers

**hduser@admin:~\$ jps**

469 DataNode

742 SecondaryNameNode

32759 NameNode

31180 NodeManager

31020 Resource Manager

988 Jps