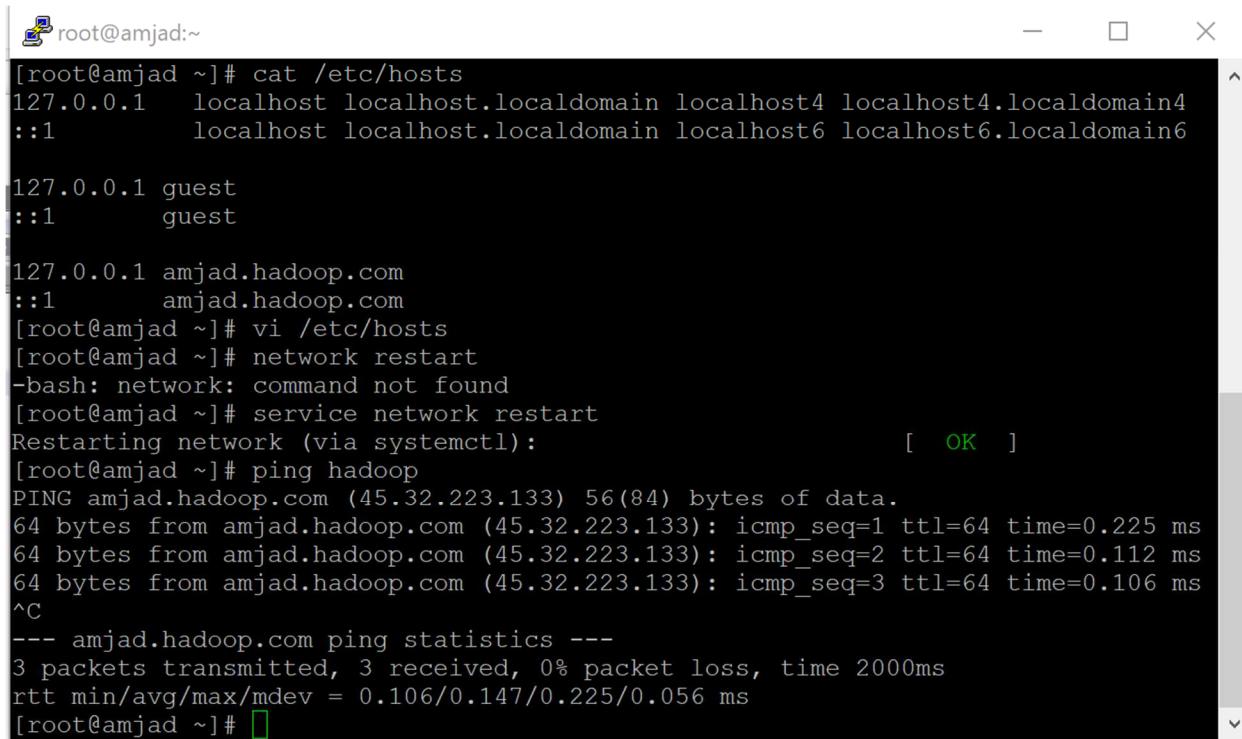


Step in implementing the single node

1) Login in using Putty and access your cloud based OS/Terminal

2) Changing the hostname



The screenshot shows a terminal window with a dark background and white text. It starts with the root prompt [root@amjad ~]# followed by the command cat /etc/hosts. The output shows the current configuration of the hosts file. Then, the user runs vi /etc/hosts to edit it. After saving changes, they attempt to restart the network using the command network restart, which fails because the command is not found. Instead, they use service network restart, which succeeds as indicated by the [OK] message. Finally, they run ping hadoop to test connectivity, receiving three successful responses with times around 0.1ms. The session ends with ^C and the command ping statistics.

```
[root@amjad ~]# cat /etc/hosts
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
::1         localhost localhost.localdomain localhost6 localhost6.localdomain6

127.0.0.1 guest
::1         guest

127.0.0.1 amjad.hadoop.com
::1         amjad.hadoop.com
[root@amjad ~]# vi /etc/hosts
[root@amjad ~]# network restart
-bash: network: command not found
[root@amjad ~]# service network restart
Restarting network (via systemctl): [ OK ]
[root@amjad ~]# ping hadoop
PING amjad.hadoop.com (45.32.223.133) 56(84) bytes of data.
64 bytes from amjad.hadoop.com (45.32.223.133): icmp_seq=1 ttl=64 time=0.225 ms
64 bytes from amjad.hadoop.com (45.32.223.133): icmp_seq=2 ttl=64 time=0.112 ms
64 bytes from amjad.hadoop.com (45.32.223.133): icmp_seq=3 ttl=64 time=0.106 ms
^C
--- amjad.hadoop.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2000ms
rtt min/avg/max/mdev = 0.106/0.147/0.225/0.056 ms
[root@amjad ~]#
```

3) Downloading Java and Hadoop in Installation_files folder:

```
root@amjad:~/installer_files
[root@amjad ~]# mkdir installer_files
[root@amjad ~]# ls
installer_files
[root@amjad ~]# cd installer_files/
[root@amjad installer_files]# wget https://mirror.its.sfu.ca/mirror/CentOS-Third-Party/NSG/common/x86_64/jdk-8u102-linux-x64.rpm
--2017-10-31 22:14:49--  https://mirror.its.sfu.ca/mirror/CentOS-Third-Party/NSG/common/x86_64/jdk-8u102-linux-x64.rpm
Resolving mirror.its.sfu.ca (mirror.its.sfu.ca)... 142.58.101.156
Connecting to mirror.its.sfu.ca (mirror.its.sfu.ca)|142.58.101.156|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 166044032 (158M) [application/x-rpm]
Saving to: 'jdk-8u102-linux-x64.rpm'

100%[=====] 166,044,032 32.0MB/s   in 19s

2017-10-31 22:15:08 (8.46 MB/s) - 'jdk-8u102-linux-x64.rpm' saved [166044032/166044032]

[root@amjad installer_files]# 
[root@amjad ~]# cd installer_files/
[root@amjad installer_files]# ll
total 199364
-rw-r--r-- 1 root root 38096663 Nov  6 2014 hadoop-1.2.1-bin.tar.gz
-rw-r--r-- 1 root root 166044032 Sep 28 2016 jdk-8u102-linux-x64.rpm
[root@amjad installer_files]# 
```

4) Editing the /Etc/Profile

```
root@amjad:~/installer_files
# You could check uidgid reservation validity in
# /usr/share/doc/setup-*/uidgid file
if [ $UID -gt 199 ] && [ "`/usr/bin/id -gn`" = "`/usr/bin/id -un`" ]; then
    umask 002
else
    umask 022
fi

for i in /etc/profile.d/*.sh ; do
    if [ -r "$i" ]; then
        if [ "${-#*i}" != "$-" ]; then
            . "$i"
        else
            . "$i" >/dev/null
        fi
    fi
done

unset i
unset -f pathmunge
export JAVA_HOME=/usr/java/default
export PATH=$PATH:$JAVA_HOME/bin
-- INSERT --
```

5) Generating SSH-Keygen (Access for Hduser and Hadoop(amjad.hadoop.com))

```
[root@amjad ~]# cat /etc/hosts
45.32.223.133 amjad.hadoop.com hadoop
[root@amjad ~]# ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/root/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_rsa.
Your public key has been saved in /root/.ssh/id_rsa.pub.
The key fingerprint is:
9f:5e:95:35:85:a4:01:55:c9:b4:32:2a:7a:74:50:eb root@amjad.hadoop.com
The key's randomart image is:
+--[ RSA 2048]----+
|          ooo=+o.|
|         . . o+..|
|         . . + ...|
|         o . o o.|
|        S E   o   |
|        o + . .  |
|       . . o ..  |
|       . . . .  |
|       . . . .  |
+-----+
[root@amjad ~]#
```

```
[root@amjad ~]
4sY+BnpxFqR0+w0P5GDQxyFHFaGqvVEsM9a41nRTCojnQbGl6IU76+G4kW51I88Dwl2Na/3N60YyYlVD
okHQE+hSVYahjKsKLYr4zRAc7oQX1fcbWACg7gWW4esp1fLBa6pOYc29Irof root@amjad.hadoop.c
om
[root@amjad .ssh]# source authorized_keys
-bash: authorized_keys: No such file or directory
[root@amjad .ssh]# ll
total 8
-rw----- 1 root root 1679 Oct 31 22:31 id_rsa
-rw-r--r-- 1 root root 403 Oct 31 22:31 id_rsa.pub
[root@amjad .ssh]# source authorized_keys
-bash: authorized_keys: No such file or directory
[root@amjad .ssh]# touch authorized_keys
[root@amjad .ssh]# vi authorized_keys
[root@amjad .ssh]# ssh hadoop
The authenticity of host 'hadoop (45.32.223.133)' can't be established.
ECDSA key fingerprint is dc:36:1b:41:84:a3:fe:39:eb:89:8c:72:2a:1c:38:b1.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'hadoop,45.32.223.133' (ECDSA) to the list of known h
osts.
Last failed login: Tue Oct 31 22:35:34 UTC 2017 from amjad.hadoop.com on ssh:not
ty
There were 6 failed login attempts since the last successful login.
Last login: Tue Oct 31 22:06:49 2017 from cpe-96-29-217-53.kya.res.rr.com
[root@amjad ~]#
```

6) Creating Hadoop group (ahadoop) and hadoop user (hduser)

```
root@amjad:~/installer_files
-bash: authorized_keys: No such file or directory
[root@amjad .ssh]# touch authorized_keys
[root@amjad .ssh]# vi authorized_keys
[root@amjad .ssh]# ssh hadoop
The authenticity of host 'hadoop (45.32.223.133)' can't be established.
ECDSA key fingerprint is dc:36:1b:41:84:a3:fe:39:eb:89:8c:72:2a:1c:38:b1.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'hadoop,45.32.223.133' (ECDSA) to the list of known hosts.
Last failed login: Tue Oct 31 22:35:34 UTC 2017 from amjad.hadoop.com on ssh:atty
There were 6 failed login attempts since the last successful login.
Last login: Tue Oct 31 22:06:49 2017 from cpe-96-29-217-53.kya.res.rr.com
[root@amjad ~]# exit
logout
Connection to hadoop closed.
[root@amjad .ssh]# cd
[root@amjad ~]# cd installer_files/
[root@amjad installer_files]# groupadd ahadoop
[root@amjad installer_files]# useradd -g ahadoop hduser
[root@amjad installer_files]# ll /home
total 4
drwx----- 2 hduser ahadoop 4096 Oct 31 22:40 hduser
[root@amjad installer_files]#
```

7) Setting up HDUser password and logging in as HDUser

```
root@amjad:~/installer_files
[root@amjad installer_files]# passwd hduser
Changing password for user hduser.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
[root@amjad installer_files]#
```

```
hduser@amjad:/root/installer_files
[hduser@amjad installer_files]$ whoami
hduser
[hduser@amjad installer_files]$
```

8) Doing SSH-KEYGEN in HDuser and switching the users to test

hduser@amjad:~

```
[hduser@amjad installer_files]$ cd
[hduser@amjad ~]$ cat .bashrc
# .bashrc

# Source global definitions
if [ -f /etc/bashrc ]; then
    . /etc/bashrc
fi

# Uncomment the following line if you don't like systemctl's auto-paging feature
#:
# export SYSTEMD_PAGER=

# User specific aliases and functions
[hduser@amjad ~]$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/hduser/.ssh/id_rsa):
Created directory '/home/hduser/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
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:
8e:67:d8:69:d4:e0:bb:7a:42:3f:90:d9:99:0e:af hduser@amjad.hadoop.com
The key's randomart image is:
+--[ RSA 2048]----+
|          .       |
|          . o      |
|          o .      |
|          . o      |
|          S+=o     |
|          =*o+.    |
|          o.**.   |
|          +..*     |
|          E+ .     |
+-----+
[hduser@amjad ~]$
```

hduser@amjad:~

```
| . o |
| o . |
| . o |
| S+=o |
| =*o+.
| o.*.*
| +..*
| E+ .
+-----+
[hduser@amjad ~]$ ll .ssh/
total 8
-rw----- 1 hduser ahadoop 1679 Oct 31 22:42 id_rsa
-rw-r--r-- 1 hduser ahadoop 405 Oct 31 22:42 id_rsa.pub
[hduser@amjad ~]$ cd .ssh/
[hduser@amjad .ssh]$ ll
total 8
-rw----- 1 hduser ahadoop 1679 Oct 31 22:42 id_rsa
-rw-r--r-- 1 hduser ahadoop 405 Oct 31 22:42 id_rsa.pub
[hduser@amjad .ssh]$ cp id_rsa.pub >> authorized_keys
cp: missing destination file operand after 'id_rsa.pub'
Try 'cp --help' for more information.
[hduser@amjad .ssh]$ cat id_rsa.pub >> authorized_keys
[hduser@amjad .ssh]$ cat authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQCsksxONf10167CtqJbhAqY/q8mAHz+Y1Q409YI/x81f
2X+KAiHvIUV1FpEYhqASPTR/6s5YBAKMm/yvVTOP/sstca7WBMvZlqeTFB1F+aE3BK9PDNaChUoG+gT4
EfUhNdIVHW05OHkOrmA5GsqueesAsGwaoMyCTvOYVg1smEW1KS5B4soobch4qa30qozFKAS52oiHz62vR
nL7Id8t11eeewQ3LoefssZUx4D4z7Zqn/Gsubo8fsYLN6i0AS/S42eZ5yUEGaMds/Dnoaf9CHpvBLzAZ
7+vQCQkOBdYAdI3YLW5qOBJ6tY/8N/PD70NuIUttrI4UtexcAw/WjdGTe7qT hduser@amjad.hadoop
.com
[hduser@amjad .ssh]$ ssh hadoop
The authenticity of host 'hadoop (45.32.223.133)' can't be established.
ECDSA key fingerprint is dc:36:1b:41:84:a3:fe:39:eb:89:8c:72:2a:1c:38:b1.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'hadoop,45.32.223.133' (ECDSA) to the list of known hosts.
Last login: Tue Oct 31 22:41:43 2017
[hduser@amjad ~]$
```


9) Creating Namenode,Datanode,Temp directories and Installing Hadoop

```
root@amjad:~/installer_files
-rw----- 1 hduser ahadoop 1679 Oct 31 22:42 id_rsa
-rw-r--r-- 1 hduser ahadoop 405 Oct 31 22:42 id_rsa.pub
[hduser@amjad ~]$ cd .ssh/
[hduser@amjad .ssh]$ ll
total 8
-rw----- 1 hduser ahadoop 1679 Oct 31 22:42 id_rsa
-rw-r--r-- 1 hduser ahadoop 405 Oct 31 22:42 id_rsa.pub
[hduser@amjad .ssh]$ cp id_rsa.pub >> authorized_keys
cp: missing destination file operand after 'id_rsa.pub'
Try 'cp --help' for more information.
[hduser@amjad .ssh]$ cat id_rsa.pub >> authorized_keys
[hduser@amjad .ssh]$ cat authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQCsxONf10167CtqJbhAqY/q8mAHg+Y1Q409YI/x81f
2X+KAiHvIUV1FpEYhqASPTR/6s5YBAKMm/yvVTOP/sstca7WBMvZlqeTFB1F+aE3BK9PDNaChUoG+gT4
EfUhNdIVHW05OhkOrmA5GsqueesAsGwaoMyCTvOYVg1smEW1KS5B4soobch4qa3OqozFKAS52oiHz62vR
nL7Id8t11eeewQ3LoefssZUx4D4z7Zqn/Gsubo8fsYLN6i0AS/S42eZ5yUEGaMds/Dnoaf9CHpvBLzAZ
7+vQCQkOBdYAdI3YLW5qOJB6tY/8N/PD70NuIUttRI4UtexcAw/WjdGTe7qT hduser@amjad.hadoop
.com
[hduser@amjad .ssh]$ ssh hadoop
The authenticity of host 'hadoop (45.32.223.133)' can't be established.
ECDSA key fingerprint is dc:36:1b:41:84:a3:fe:39:eb:89:8c:72:2a:1c:38:b1.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'hadoop,45.32.223.133' (ECDSA) to the list of known hosts.
Last login: Tue Oct 31 22:41:43 2017
[hduser@amjad ~]$ exit
logout
Connection to hadoop closed.
[hduser@amjad .ssh]$ exit
exit
[root@amjad installer_files]# cd
[root@amjad ~]# mkdir /usr/hadoop
[root@amjad ~]# mkdir /usr/hadoop/namenode
[root@amjad ~]# mkdir /usr/hadoop/datanode
[root@amjad ~]# mkdir /usr/hadoop/tmp
[root@amjad ~]# cd installer_files/
[root@amjad installer_files]#
```

 root@amjad:~

```
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'hadoop,45.32.223.133' (ECDSA) to the list of known hosts.
Last login: Tue Oct 31 22:41:43 2017
[hduser@amjad ~]$ exit
logout
Connection to hadoop closed.
[hduser@amjad .ssh]$ exit
exit
[root@amjad installer_files]# cd
[root@amjad ~]# mkdir /usr/hadoop
[root@amjad ~]# mkdir /usr/hadoop/namenode
[root@amjad ~]# mkdir /usr/hadoop/datanode
[root@amjad ~]# mkdir /usr/hadoop/tmp
[root@amjad ~]# cd installer_files/
[root@amjad installer_files]# tar -zxvf hadoop-1.2.1-bin.tar.gz -C /usr/hadoop
hadoop-1.2.1/
hadoop-1.2.1/.eclipse.templates/
hadoop-1.2.1/.eclipse.templates/.externalToolBuilders/
hadoop-1.2.1/.eclipse.templates/.launches/
hadoop-1.2.1/bin/
hadoop-1.2.1/c++
hadoop-1.2.1/c++/Linux-amd64-64/
hadoop-1.2.1/c++/Linux-amd64-64/include/
hadoop-1.2.1/c++/Linux-amd64-64/include/hadoop/
hadoop-1.2.1/c++/Linux-amd64-64/lib/
hadoop-1.2.1/c++/Linux-i386-32/
hadoop-1.2.1/c++/Linux-i386-32/include/
hadoop-1.2.1/c++/Linux-i386-32/include/hadoop/
hadoop-1.2.1/c++/Linux-i386-32/lib/
hadoop-1.2.1/conf/
hadoop-1.2.1/contrib/
hadoop-1.2.1/contrib/datajoin/
hadoop-1.2.1/contrib/failmon/
hadoop-1.2.1/contrib/gridmix/
hadoop-1.2.1/contrib/hdfsproxy/
hadoop-1.2.1/contrib/hdfsproxy/bin/
```

10) Setting up /user/hadoop/hadoop-1.2.1/conf Environments

```
root@amjad:/usr/hadoop/hadoop-1.2.1/conf
<?xml-stylesheet type="text/xsl" href="configuration.xsl"?>
<!-- Put site-specific property overrides in this file. -->
<configuration>
    <property>
        <name>dfs.replication</name>
        <value>1</value>
    </property>
    <property>
        <name>dfs.name.dir</name>
        <value>/usr/hadoop/namenode</value>
    </property>
    <property>
        <name>dfs.data.dir</name>
        <value>/usr/hadoop/datanode</value>
    </property>
</configuration>
[root@amjad conf]# vi mapred-site.xml
[root@amjad conf]# cat mapred-site.xml
<?xml version="1.0"?>
<?xml-stylesheet type="text/xsl" href="configuration.xsl"?>
<!-- Put site-specific property overrides in this file. -->
<configuration>
    <property>
        <name>mapreduce.framework.name</name>
        <value>yarn</value>
    </property>
    <property>
        <name>mapreduce.jobhistory.webapp.address</name>
        <value>amjad.hadoop.com:19888</value>
    </property>
</configuration>
[root@amjad conf]#
```

```
root@amjad:/usr/hadoop/hadoop-1.2.1/conf
<?xml version="1.0"?>
<?xml-stylesheet type="text/xsl" href="configuration.xsl"?>

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

<configuration>
<property>
    <name>fs.default.name</name>
    <value>hdfs://amjad.hadoop.com:9000</value>
</property>
</configuration>
[root@amjad conf]# vi hdfs-site.xml
[root@amjad conf]# cat hds
cat: hds: No such file or directory
[root@amjad conf]# cat hdfs-site.xml
<?xml version="1.0"?>
<?xml-stylesheet type="text/xsl" href="configuration.xsl"?>

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

<configuration>

<property>
    <name>dfs.replication</name>
    <value>1</value>
</property>
<property>
    <name>dfs.name.dir</name>
    <value>/usr/hadoop/namenode</value>
</property>
<property>
    <name>dfs.data.dir</name>
    <value>/usr/hadoop/datanode</value>
</property>
</configuration>
[root@amjad conf]#
```

```
root@amjad:/usr/hadoop/hadoop-1.2.1/conf
[root@amjad conf]# cat slaves
amjad.hadoop.com
[root@amjad conf]# ll
total 84
-rw-r--r-- 1 root root 17 Oct 31 22:51 \
-rw-rw-r-- 1 root root 7457 Jul 22 2013 capacity-scheduler.xml
-rw-rw-r-- 1 root root 1095 Jul 22 2013 configuration.xsl
-rw-rw-r-- 1 root root 178 Jul 22 2013 core-site.xml
-rw-rw-r-- 1 root root 327 Jul 22 2013 fair-scheduler.xml
-rw-rw-r-- 1 root root 2435 Jul 22 2013 hadoop-env.sh
-rw-rw-r-- 1 root root 2052 Jul 22 2013 hadoop-metrics2.properties
-rw-rw-r-- 1 root root 4644 Jul 22 2013 hadoop-policy.xml
-rw-rw-r-- 1 root root 178 Jul 22 2013 hdfs-site.xml
-rw-rw-r-- 1 root root 5018 Jul 22 2013 log4j.properties
-rw-rw-r-- 1 root root 2033 Jul 22 2013 mapred-queue-acls.xml
-rw-rw-r-- 1 root root 178 Jul 22 2013 mapred-site.xml
-rw-rw-r-- 1 root root 17 Oct 31 22:51 masters
-rw-rw-r-- 1 root root 17 Oct 31 22:51 slaves
-rw-rw-r-- 1 root root 2042 Jul 22 2013 ssl-client.xml.example
-rw-rw-r-- 1 root root 1994 Jul 22 2013 ssl-server.xml.example
-rw-rw-r-- 1 root root 382 Jul 22 2013 taskcontroller.cfg
-rw-rw-r-- 1 root root 3890 Jul 22 2013 task-log4j.properties
[root@amjad conf]# vi core-site.xml
[root@amjad conf]# cat core-site.xml
<?xml version="1.0"?>
<?xml-stylesheet type="text/xsl" href="configuration.xsl"?>

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

<configuration>
<property>
  <name>fs.default.name</name>
  <value>hdfs://amjad.hadoop.com:9000</value>
</property>
</configuration>
[root@amjad conf]#
```

root@amjad:/usr/hadoop/hadoop-1.2.1/conf

```
-rw-rw-r-- 1 root root 10525 Jul 22 2013 ivy.xml
drwxr-xr-x 5 root root 4096 Oct 31 22:48 lib
drwxr-xr-x 2 root root 4096 Oct 31 22:48 libexec
-rw-rw-r-- 1 root root 13366 Jul 22 2013 LICENSE.txt
-rw-rw-r-- 1 root root 101 Jul 22 2013 NOTICE.txt
-rw-rw-r-- 1 root root 1366 Jul 22 2013 README.txt
drwxr-xr-x 2 root root 4096 Oct 31 22:48 sbin
drwxr-xr-x 3 root root 4096 Jul 22 2013 share
drwxr-xr-x 3 root root 4096 Oct 31 22:48 src
drwxr-xr-x 9 root root 4096 Jul 22 2013 webapps
[root@amjad hadoop-1.2.1]# cd conf
[root@amjad conf]# ll
total 80
-rw-rw-r-- 1 root root 7457 Jul 22 2013 capacity-scheduler.xml
-rw-rw-r-- 1 root root 1095 Jul 22 2013 configuration.xsl
-rw-rw-r-- 1 root root 178 Jul 22 2013 core-site.xml
-rw-rw-r-- 1 root root 327 Jul 22 2013 fair-scheduler.xml
-rw-rw-r-- 1 root root 2435 Jul 22 2013 hadoop-env.sh
-rw-rw-r-- 1 root root 2052 Jul 22 2013 hadoop-metrics2.properties
-rw-rw-r-- 1 root root 4644 Jul 22 2013 hadoop-policy.xml
-rw-rw-r-- 1 root root 178 Jul 22 2013 hdfs-site.xml
-rw-rw-r-- 1 root root 5018 Jul 22 2013 log4j.properties
-rw-rw-r-- 1 root root 2033 Jul 22 2013 mapred-queue-acls.xml
-rw-rw-r-- 1 root root 178 Jul 22 2013 mapred-site.xml
-rw-rw-r-- 1 root root 10 Jul 22 2013 masters
-rw-rw-r-- 1 root root 10 Jul 22 2013 slaves
-rw-rw-r-- 1 root root 2042 Jul 22 2013 ssl-client.xml.example
-rw-rw-r-- 1 root root 1994 Jul 22 2013 ssl-server.xml.example
-rw-rw-r-- 1 root root 382 Jul 22 2013 taskcontroller.cfg
-rw-rw-r-- 1 root root 3890 Jul 22 2013 task-log4j.properties
[root@amjad conf]# vi masters
[root@amjad conf]# vi slaves
[root@amjad conf]# cat masters
amjad.hadoop.com
[root@amjad conf]# cat slaves
amjad.hadoop.com
[root@amjad conf]#
```

11) Editing two lines in hadoop-env.sh file

```
root@amjad:/usr/hadoop/hadoop-1.2.1/conf
# Command specific options appended to HADOOP_OPTS when specified
export HADOOP_NAMENODE_OPTS="-Dcom.sun.management.jmxremote $HADOOP_NAMENODE_OPTS"
export HADOOP_SECONDARYNAMENODE_OPTS="-Dcom.sun.management.jmxremote $HADOOP_SECONDARYNAMENODE_OPTS"
export HADOOP_DATANODE_OPTS="-Dcom.sun.management.jmxremote $HADOOP_DATANODE_OPTS"
export HADOOP_BALANCER_OPTS="-Dcom.sun.management.jmxremote $HADOOP_BALANCER_OPTS"
export HADOOP_JOBTRACKER_OPTS="-Dcom.sun.management.jmxremote $HADOOP_JOBTRACKER_OPTS"
# export HADOOP_TASKTRACKER_OPTS=
# The following applies to multiple commands (fs, dfs, fsck, distcp etc)
# export HADOOP_CLIENT_OPTS

# Extra ssh options. Empty by default.
# export HADOOP_SSH_OPTS="-o ConnectTimeout=1 -o SendEnv=HADOOP_CONF_DIR"

# Where log files are stored. $HADOOP_HOME/logs by default.
# export HADOOP_LOG_DIR=/var/log/hadoop/logs

# File naming remote slave hosts. $HADOOP_HOME/conf/slaves by default.
# export HADOOP_SLAVES=${HADOOP_HOME}/conf/slaves

# host:path where hadoop code should be rsync'd from. Unset by default.
# export HADOOP_MASTER=master:/home/$USER/src/hadoop

# Seconds to sleep between slave commands. Unset by default. This
# can be useful in large clusters, where, e.g., slave rsyncs can
# otherwise arrive faster than the master can service them.
# export HADOOP_SLAVE_SLEEP=0.1

# The directory where pid files are stored. /tmp by default.
# NOTE: this should be set to a directory that can only be written to by
#       the users that are going to run the hadoop daemons. Otherwise there is
#       the potential for a symlink attack.
-- INSERT --
```

12) Giving permissions to User (hduser) and updating the profile (/etc/profile) and testing hadoop commands

```
root@amjad:/usr/hadoop
-rw-rw-r-- 1 root root 7457 Jul 22 2013 capacity-scheduler.xml
-rw-rw-r-- 1 root root 1095 Jul 22 2013 configuration.xsl
-rw-rw-r-- 1 root root 280 Oct 31 22:54 core-site.xml
-rw-rw-r-- 1 root root 327 Jul 22 2013 fair-scheduler.xml
-rw-rw-r-- 1 root root 2431 Oct 31 23:00 hadoop-env.sh
-rw-rw-r-- 1 root root 2052 Jul 22 2013 hadoop-metrics2.properties
-rw-rw-r-- 1 root root 4644 Jul 22 2013 hadoop-policy.xml
-rw-rw-r-- 1 root root 449 Oct 31 22:55 hdfs-site.xml
-rw-rw-r-- 1 root root 5018 Jul 22 2013 log4j.properties
-rw-rw-r-- 1 root root 2033 Jul 22 2013 mapred-queue-acls.xml
-rw-rw-r-- 1 root root 382 Oct 31 22:57 mapred-site.xml
-rw-rw-r-- 1 root root 17 Oct 31 22:51 masters
-rw-rw-r-- 1 root root 17 Oct 31 22:51 slaves
-rw-rw-r-- 1 root root 2042 Jul 22 2013 ssl-client.xml.example
-rw-rw-r-- 1 root root 1994 Jul 22 2013 ssl-server.xml.example
-rw-rw-r-- 1 root root 382 Jul 22 2013 taskcontroller.cfg
-rw-rw-r-- 1 root root 3890 Jul 22 2013 task-log4j.properties
[root@amjad conf]# cd
[root@amjad ~]# cd /usr/hadoop/
[root@amjad hadoop]# ll
total 16
drwxr-xr-x 2 root root 4096 Oct 31 22:46 datanode
drwxr-xr-x 14 root root 4096 Jul 22 2013 hadoop-1.2.1
drwxr-xr-x 2 root root 4096 Oct 31 22:46 namenode
drwxr-xr-x 2 root root 4096 Oct 31 22:46 tmp
[root@amjad hadoop]# chown -R hduser:ahadoop *
[root@amjad hadoop]# ll
total 16
drwxr-xr-x 2 hduser ahadoop 4096 Oct 31 22:46 datanode
drwxr-xr-x 14 hduser ahadoop 4096 Jul 22 2013 hadoop-1.2.1
drwxr-xr-x 2 hduser ahadoop 4096 Oct 31 22:46 namenode
drwxr-xr-x 2 hduser ahadoop 4096 Oct 31 22:46 tmp
[root@amjad hadoop]# chown -R hduser:ahadoop /var/log/hadoop
[root@amjad hadoop]# ll /var/log/hadoop/
total 4
drwxr-xr-x 2 hduser ahadoop 4096 Oct 31 23:01 logs
[root@amjad hadoop]#
```

 root@amjad:~

```
total 16
drwxr-xr-x  2 hduser ahadoop 4096 Oct 31 22:46 datanode
drwxr-xr-x 14 hduser ahadoop 4096 Jul 22 2013 hadoop-1.2.1
drwxr-xr-x  2 hduser ahadoop 4096 Oct 31 22:46 namenode
drwxr-xr-x  2 hduser ahadoop 4096 Oct 31 22:46 tmp
[root@amjad hadoop]# chown -R hduser:ahadoop /var/log/hadoop
[root@amjad hadoop]# ll /var/log/hadoop/
total 4
drwxr-xr-x 2 hduser ahadoop 4096 Oct 31 23:01 logs
[root@amjad hadoop]# cd
[root@amjad ~]# vi /etc/profile
[root@amjad ~]# source /etc/profile
[root@amjad ~]# echo $HADOOP_HOME
/usr/hadoop/hadoop-1.2.1
[root@amjad ~]# hadoop
Warning: $HADOOP_HOME is deprecated.

Usage: hadoop [--config confdir] COMMAND
where COMMAND is one of:
  namenode -format      format the DFS filesystem
  secondarynamenode     run the DFS secondary namenode
  namenode              run the DFS namenode
  datanode              run a DFS datanode
  dfsadmin              run a DFS admin client
  mradmin               run a Map-Reduce admin client
  fsck                  run a DFS filesystem checking utility
  fs                    run a generic filesystem user client
  balancer              run a cluster balancing utility
  oiv                  apply the offline fsimage viewer to an fsimage
  fetchdt              fetch a delegation token from the NameNode
  jobtracker            run the MapReduce job Tracker node
  pipes                 run a Pipes job
  tasktracker           run a MapReduce task Tracker node
  historyserver         run job history servers as a standalone daemon
  job                   manipulate MapReduce jobs
  queue                 get information regarding JobQueues
  version               print the version
  jar <jar>              run a jar file
  distcp <srcurl> <desturl> copy file or directories recursively
  distcp2 <srcurl> <desturl> DistCp version 2
  archive -archiveName NAME -p <parent path> <src>* <dest> create a hadoop archive
  classpath             prints the class path needed to get the
                        Hadoop jar and the required libraries
  daemonlog             get/set the log level for each daemon
  or
  CLASSNAME             run the class named CLASSNAME
Most commands print help when invoked w/o parameters.
[root@amjad ~]#
```

13) Format namenode

```
root@amjad:~  
STARTUP_MSG: java = 1.8.0_102  
*****  
Re-format filesystem in /usr/hadoop/namenode ? (Y or N) yes  
Format aborted in /usr/hadoop/namenode  
17/10/31 23:07:50 INFO namenode.NameNode: SHUTDOWN_MSG:  
*****  
SHUTDOWN_MSG: Shutting down NameNode at amjad.hadoop.com/45.32.223.133  
*****  
[root@amjad ~]# hadoop namenode -format -force  
Warning: $HADOOP_HOME is deprecated.  
  
17/10/31 23:08:16 INFO namenode.NameNode: STARTUP_MSG:  
*****  
STARTUP_MSG: Starting NameNode  
STARTUP_MSG: host = amjad.hadoop.com/45.32.223.133  
STARTUP_MSG: args = [-format, -force]  
STARTUP_MSG: version = 1.2.1  
STARTUP_MSG: build = https://svn.apache.org/repos/asf/hadoop/common/branches/b  
ranch-1.2 -r 1503152; compiled by 'mattf' on Mon Jul 22 15:23:09 PDT 2013  
STARTUP_MSG: java = 1.8.0_102  
*****  
17/10/31 23:08:17 INFO util.GSet: Computing capacity for map BlocksMap  
17/10/31 23:08:17 INFO util.GSet: VM type      = 64-bit  
17/10/31 23:08:17 INFO util.GSet: 2.0% max memory = 932184064  
17/10/31 23:08:17 INFO util.GSet: capacity      = 2^21 = 2097152 entries  
17/10/31 23:08:17 INFO util.GSet: recommended=2097152, actual=2097152  
17/10/31 23:08:17 INFO namenode.FSNamesystem: fsOwner=root  
17/10/31 23:08:17 INFO namenode.FSNamesystem: supergroup=supergroup  
17/10/31 23:08:17 INFO namenode.FSNamesystem: isPermissionEnabled=true  
17/10/31 23:08:17 INFO namenode.FSNamesystem: dfs.block.invalidate.limit=100  
17/10/31 23:08:17 INFO namenode.FSNamesystem: isAccessTokenEnabled=false accessK  
eyUpdateInterval=0 min(s), accessTokenLifetime=0 min(s)  
17/10/31 23:08:17 INFO namenode.FSEditLog: dfs.namenode.edits.toleration.length  
= 0  
17/10/31 23:08:17 INFO namenode.NameNode: Caching file names occurring more than  
10 times  
17/10/31 23:08:17 INFO common.Storage: Image file /usr/hadoop/namenode/current/f  
simage of size 110 bytes saved in 0 seconds.  
17/10/31 23:08:17 INFO namenode.FSEditLog: closing edit log: position=4, editlog  
=/usr/hadoop/namenode/current/edits  
17/10/31 23:08:17 INFO namenode.FSEditLog: close success: truncate to 4, editlog  
=/usr/hadoop/namenode/current/edits  
17/10/31 23:08:17 INFO common.Storage: Storage directory /usr/hadoop/namenode ha  
s been successfully formatted.  
17/10/31 23:08:17 INFO namenode.NameNode: SHUTDOWN_MSG:  
*****  
SHUTDOWN_MSG: Shutting down NameNode at amjad.hadoop.com/45.32.223.133  
*****  
[root@amjad ~]#
```

14) Going in the directory to start the Daemons

```
hduser@amjad:/usr/hadoop/hadoop-1.2.1/bin
        at org.apache.hadoop.hdfs.server.namenode.NameNode.format (NameNode.java:1261)
        at org.apache.hadoop.hdfs.server.namenode.NameNode.createNameNode (NameNode.java:1467)
        at org.apache.hadoop.hdfs.server.namenode.NameNode.main (NameNode.java:1488)

17/10/31 23:09:49 INFO namenode.NameNode: SHUTDOWN_MSG:
***** SHUTDOWN_MSG: Shutting down NameNode at amjad.hadoop.com/45.32.223.133 *****
[hduser@amjad root]$ jps
3585 Jps
[hduser@amjad root]$ cd $HADOOP_HOME
[hduser@amjad hadoop-1.2.1]$ ll
total 8384
drwxr-xr-x  2 hduser ahadoop  4096 Oct 31 22:48 bin
-rw-rw-r--  1 hduser ahadoop 121130 Jul 22 2013 build.xml
drwxr-xr-x  4 hduser ahadoop  4096 Jul 22 2013 c++
-rw-rw-r--  1 hduser ahadoop 493744 Jul 22 2013 CHANGES.txt
drwxr-xr-x  2 hduser ahadoop  4096 Oct 31 23:00 conf
drwxr-xr-x 10 hduser ahadoop  4096 Jul 22 2013 contrib
-rw-rw-r--  1 hduser ahadoop  6842 Jul 22 2013 hadoop-ant-1.2.1.jar
-rw-rw-r--  1 hduser ahadoop  414 Jul 22 2013 hadoop-client-1.2.1.jar
-rw-rw-r--  1 hduser ahadoop 4203147 Jul 22 2013 hadoop-core-1.2.1.jar
-rw-rw-r--  1 hduser ahadoop 142726 Jul 22 2013 hadoop-examples-1.2.1.jar
-rw-rw-r--  1 hduser ahadoop  417 Jul 22 2013 hadoop-minicluster-1.2.1.jar
-rw-rw-r--  1 hduser ahadoop 3126576 Jul 22 2013 hadoop-test-1.2.1.jar
-rw-rw-r--  1 hduser ahadoop 385634 Jul 22 2013 hadoop-tools-1.2.1.jar
drwxr-xr-x  2 hduser ahadoop  4096 Oct 31 22:48 ivy
-rw-rw-r--  1 hduser ahadoop 10525 Jul 22 2013 ivy.xml
drwxr-xr-x  5 hduser ahadoop  4096 Oct 31 22:48 lib
drwxr-xr-x  2 hduser ahadoop  4096 Oct 31 22:48 libexec
-rw-rw-r--  1 hduser ahadoop 13366 Jul 22 2013 LICENSE.txt
-rw-rw-r--  1 hduser ahadoop  101 Jul 22 2013 NOTICE.txt
-rw-rw-r--  1 hduser ahadoop 1366 Jul 22 2013 README.txt
drwxr-xr-x  2 hduser ahadoop  4096 Oct 31 22:48 sbin
drwxr-xr-x  3 hduser ahadoop  4096 Jul 22 2013 share
drwxr-xr-x  3 hduser ahadoop  4096 Oct 31 22:48 src
drwxr-xr-x  9 hduser ahadoop  4096 Jul 22 2013 webapps
[hduser@amjad hadoop-1.2.1]$ cd bin/
[hduser@amjad bin]$ ls
hadoop      start-all.sh          stop-balancer.sh
hadoop-config.sh start-balancer.sh  stop-dfs.sh
hadoop-daemon.sh start-dfs.sh      stop-jobhistoryserver.sh
hadoop-daemons.sh start-jobhistoryserver.sh  stop-mapred.sh
rcc          start-mapred.sh       task-controller
slaves.sh    stop-all.sh
```

15) Checking JPS and all daemons are running

```
root@amjad:/usr/hadoop/hadoop-1.2.1/bin
[root@amjad bin]# ll
total 144
-rwxr-xr-x 1 hduser ahadoop 15147 Jul 22 2013 hadoop
-rwxr-xr-x 1 hduser ahadoop 2643 Jul 22 2013 hadoop-config.sh
-rwxr-xr-x 1 hduser ahadoop 5064 Jul 22 2013 hadoop-daemon.sh
-rwxr-xr-x 1 hduser ahadoop 1329 Jul 22 2013 hadoop-daemons.sh
-rwxr-xr-x 1 hduser ahadoop 2810 Jul 22 2013 rcc
-rwxr-xr-x 1 hduser ahadoop 2050 Jul 22 2013 slaves.sh
-rwxr-xr-x 1 hduser ahadoop 1166 Jul 22 2013 start-all.sh
-rwxr-xr-x 1 hduser ahadoop 1065 Jul 22 2013 start-balancer.sh
-rwxr-xr-x 1 hduser ahadoop 1745 Jul 22 2013 start-dfs.sh
-rwxr-xr-x 1 hduser ahadoop 1145 Jul 22 2013 start-jobhistoryserver.sh
-rwxr-xr-x 1 hduser ahadoop 1259 Jul 22 2013 start-mapred.sh
-rwxr-xr-x 1 hduser ahadoop 1119 Jul 22 2013 stop-all.sh
-rwxr-xr-x 1 hduser ahadoop 1116 Jul 22 2013 stop-balancer.sh
-rwxr-xr-x 1 hduser ahadoop 1246 Jul 22 2013 stop-dfs.sh
-rwxr-xr-x 1 hduser ahadoop 1131 Jul 22 2013 stop-jobhistoryserver.sh
-rwxr-xr-x 1 hduser ahadoop 1168 Jul 22 2013 stop-mapred.sh
-rwxr-xr-x 1 hduser ahadoop 63598 Jul 22 2013 task-controller
[root@amjad bin]# jps
13041 Jps
12758 JobTracker
12872 TaskTracker
12411 NameNode
12652 SecondaryNameNode
12543 DataNode
[root@amjad bin]#
```

16) Accessing Namenode and Mapred via browser

NameNode 'amjad.hadoop.com:54310'

Started: Tue Oct 31 23:52:03 UTC 2017
Version: 1.2.1, r1503152
Compiled: Mon Jul 22 15:23:09 PDT 2013 by mattf
Upgrades: There are no upgrades in progress.

[Browse the filesystem](#)
[Namenode Logs](#)

Cluster Summary

7 files and directories, 1 blocks = 8 total. Heap Size is 119 MB / 889 MB (13%)

Configured Capacity	:	98.43 GB
DFS Used	:	28.01 KB
Non DFS Used	:	6.76 GB
DFS Remaining	:	91.67 GB
DFS Used%	:	0 %
DFS Remaining%	:	93.13 %
Live Nodes	:	1
Dead Nodes	:	0
Decommissioning Nodes	:	0
Number of Under-Replicated Blocks	:	0

NameNode Storage:

Storage Directory	Type	State
/usr/hadoop/namenode	IMAGE_AND_EDITS	Active



amjad Hadoop Map/Reduce Administration

State: RUNNING
Started: Tue Oct 31 23:52:10 UTC 2017
Version: 1.2.1, r1503152
Compiled: Mon Jul 22 15:23:09 PDT 2013 by mattf
Identifier: 201710312352
SafeMode: OFF

Cluster Summary (Heap Size is 150 MB/889 MB)

Running Map Tasks	Running Reduce Tasks	Total Submissions	Nodes	Occupied Map Slots	Occupied Reduce Slots	Reserved Map Slots	Reserved Reduce Slots	Map Task Capacity	Reduce Task Capacity	Avg. Tasks/Node	Blacklisted Nodes	Graylisted Nodes	Excluded Nodes
0	0	0	1	0	0	0	0	2	2	4.00	0	0	0

Scheduling Information

Queue Name	State	Scheduling Information
default	running	N/A

Filter (Jobid, Priority, User, Name)
Example: 'user:smith 3200' will filter by 'smith' only in the user field and '3200' in all fields

Running Jobs

Retired Jobs