**Namenode Federation**

Cluster setup:-

2 Namenodes

3 datanodes

1 client node

Total 6 Nodes

192.168.0.51 nn1.cluster.com nn1

192.168.0.52 nn2.cluster.com nn2

192.168.0.53 dn1.cluster.com dn1

192.168.0.54 dn2.cluster.com dn2

192.168.0.55 dn3.cluster.com dn3

192.168.0.56 client.cluster.com client

**@nn1**

[root@hadoop ~]# vim **/etc/hosts**

Add above node entries in /etc/hosts file

[root@hadoop ~]# groupadd hadoop

[root@hadoop ~]# useradd -g hadoop hadoop

[root@hadoop ~]#

[root@hadoop ~]# passwd hadoop

Changing password for user hadoop.

New password:

Retype new password:

passwd: all authentication tokens updated successfully.

[root@hadoop ~]#

[root@hadoop ~]#

[root@hadoop ~]# mv soft/\* /home/hadoop/

[root@hadoop ~]#

[root@hadoop ~]#

[root@hadoop ~]# ll /home/hadoop/

total 329596

-rw-r--r-- 1 root root 195257604 May 12 21:04 hadoop-2.6.0.tar.gz

-rw-r--r-- 1 root root 142245547 May 12 21:04 jdk-7u75-linux-x64.tar.gz

[root@hadoop ~]#

[root@hadoop ~]#

[root@hadoop ~]# chown hadoop:hadoop /home/hadoop/\*   
[root@hadoop ~]#

[root@hadoop ~]#

[root@hadoop ~]# ll /home/hadoop/

total 329596

-rw-r--r-- 1 hadoop hadoop 195257604 May 12 21:04 hadoop-2.6.0.tar.gz

-rw-r--r-- 1 hadoop hadoop 142245547 May 12 21:04 jdk-7u75-linux-x64.tar.gz

[root@hadoop ~]#

[root@hadoop ~]#

[root@hadoop ~]#

[hadoop@hadoop ~]$ tar zxvf hadoop-2.6.0.tar.gz

[hadoop@hadoop ~]$ tar zxvf jdk-7u75-linux-x64.tar.gz

[hadoop@hadoop ~]$ ll

total 329604

drwxr-xr-x 9 hadoop hadoop 4096 Nov 14 2014 hadoop-2.6.0

-rw-r--r-- 1 hadoop hadoop 195257604 May 12 21:04 hadoop-2.6.0.tar.gz

drwxr-xr-x 8 hadoop hadoop 4096 Dec 19 2014 jdk1.7.0\_75

-rw-r--r-- 1 hadoop hadoop 142245547 May 12 21:04 jdk-7u75-linux-x64.tar.gz

[hadoop@hadoop ~]$

[hadoop@hadoop ~]$

[hadoop@hadoop ~]$ ln -s hadoop-2.6.0 hadoop

[hadoop@hadoop ~]$

[hadoop@hadoop ~]$

[hadoop@hadoop ~]$ ln -s jdk1.7.0\_75 jdk

[hadoop@hadoop ~]$

[hadoop@hadoop ~]$

[hadoop@hadoop ~]$ ll

total 329604

lrwxrwxrwx 1 hadoop hadoop 12 Aug 22 15:59 hadoop -> hadoop-2.6.0

drwxr-xr-x 9 hadoop hadoop 4096 Nov 14 2014 hadoop-2.6.0

-rw-r--r-- 1 hadoop hadoop 195257604 May 12 21:04 hadoop-2.6.0.tar.gz

lrwxrwxrwx 1 hadoop hadoop 11 Aug 22 15:59 jdk -> jdk1.7.0\_75

drwxr-xr-x 8 hadoop hadoop 4096 Dec 19 2014 jdk1.7.0\_75

-rw-r--r-- 1 hadoop hadoop 142245547 May 12 21:04 jdk-7u75-linux-x64.tar.gz

[hadoop@hadoop ~]$

[hadoop@hadoop ~]$ cat **.bash\_profile**

HADOOP\_HOME=/home/hadoop/hadoop

JAVA\_HOME=/home/hadoop/jdk PATH=$PATH:$HOME/bin:$HADOOP\_HOME:$HADOOP\_HOME/bin:$HADOOP\_HOME/sbin:$JAVA\_HOME:$JAVA\_HOME/bin

export PATH

[hadoop@hadoop ~]$

[hadoop@hadoop ~]$ source .bash\_profile

[hadoop@hadoop ~]$ vim hadoop/etc/hadoop/hadoop-env.sh

JAVA\_HOME=/home/hadoop/jdk

[hadoop@hadoop ~]$ vim hadoop/etc/hadoop/**core-site.xml**

<configuration>

<property>

<name>hadoop.tmp.dir</name>

<value>/home/hadoop/data</value>

</property>

</configuration>

[hadoop@hadoop ~]$ vim hadoop/etc/hadoop/**hdfs-site.xml**

<configuration>

<property>

<name>dfs.replication</name>

<value>3</value>

</property>

<property>

<name>dfs.permissions</name>

<value>false</value>

</property>

<property>   
<name>dfs.namenode.name.dir</name>

<value>/home/hadoop/data/nn</value>

</property>

<property>

<name>dfs.datanode.data.dir</name>

<value>/home/hadoop/data/dn</value>

</property>

<property>

<name>dfs.federation.nameservices</name>

<value>ns1,ns2</value>

</property>

<property>

<name>dfs.namenode.rpc-address.ns1</name>

<value>192.168.0.51:8020</value>

</property>

<property>

<name>dfs.namenode.rpc-address.ns2</name>

<value>192.168.0.52:8020</value>

</property>

<property>

<name>dfs.namenode.secondary.http-address.ns1</name>

<value>192.168.0.51:50090</value>

<name>dfs.namenode.secondary.http-address.ns2</name> <value>192.168.0.52:50090</value>

</property>

<property>

<name>dfs.namenode.checkpoint.dir</name>

<value>/home/hadoop/data/snn</value>

</property>

[hadoop@hadoop ~]$ vim **hadoop/etc/hadoop/slaves**

192.168.0.53

192.168.0.54

192.168.0.55   
Generate passwordless ssh   
ssh-keygen  
ssh-copy-id –I .ssh/id\_rsa.pub 192.168.0.51

---------   
create 5 copies on this node and named them as nn2, dn1,dn2,dn3,client

on Namenode1:

[hadoop@nn1 ~]$ for i in {1..6}; do ssh 192.168.0.5$i "hostname;jdk/bin/jps;echo -e '\n'";done nn1.cluster.com

1627 Jps

nn2.cluster.com

1514 Jps

dn1.cluster.com

1432 Jps

dn2.cluster.com

1429 Jps

dn3.cluster.com

1431 Jps

client.cluster.com

1434 Jps

**ON CLIENT:**

[hadoop@client ~]$ vim **hadoop/etc/hadoop/core-site.xml**

<configuration>

<property>

<name>hadoop.tmp.dir</name>

<value>/home/hadoop/data</value>

</property>

<property>

<name>dfs.defaultFS</name>

<value>viewfs:///</value>   
</property>

<property>

<name>fs.viewfs.mounttable.default.link./Finance</name>

<value>hdfs://192.168.0.51:8020</value>

</property>

<property>

<name>fs.viewfs.mounttable.default.link./Marketing</name>

<value>hdfs://192.168.0.52:8020</value>

</property>

</configuration>

**START DAEMONS:**

on NN1:

[hadoop@nn1 ~]$ hdfs namenode -format -clusterid fedcluster

[hadoop@nn1 ~]$ hadoop-daemon.sh start namenode

[hadoop@nn1 ~]$ hadoop-daemon.sh start secondarynamenode

[hadoop@nn1 ~]$ for i in {1..6}; do ssh 192.168.0.5$i "hostname;jdk/bin/jps;echo -e '\n'";done

nn1.cluster.com

1885 SecondaryNameNode

1947 Jps

1705 NameNode

nn2.cluster.com

1558 Jps

dn1.cluster.com

1476 Jps

dn2.cluster.com

1473 Jps   
dn3.cluster.com

1475 Jps

client.cluster.com

1500 Jps

[hadoop@nn1 ~]$

**on NN2:**

[hadoop@nn2 ~]$ hdfs namenode -format -clusterid fedcluster

[hadoop@nn2 ~]$ hadoop-daemon.sh start namenode

[hadoop@nn2 ~]$ hadoop-daemon.sh start secondarynamenode

[hadoop@nn1 ~]$ for i in {1..6}; do ssh 192.168.0.5$i "hostname;jdk/bin/jps;echo -e '\n'";done

nn1.cluster.com

1885 SecondaryNameNode

1982 Jps

1705 NameNode

nn2.cluster.com

1634 NameNode

1847 Jps

1785 SecondaryNameNode

dn1.cluster.com

1498 Jps

dn2.cluster.com

1495 Jps

dn3.cluster.com

1497 Jps

client.cluster.com   
1522 Jps

[hadoop@nn1 ~]$

**on all datanodes:**

hadoop-daemon.sh start datanode

[hadoop@nn1 ~]$ for i in {1..6}; do ssh 192.168.0.5$i "hostname;jdk/bin/jps;echo -e '\n'";done

nn1.cluster.com

1885 SecondaryNameNode

2014 Jps

1705 NameNode

nn2.cluster.com

1871 Jps

1634 NameNode

1785 SecondaryNameNode

dn1.cluster.com

1631 Jps

1541 DataNode

dn2.cluster.com

1627 Jps

1538 DataNode

dn3.cluster.com

1629 Jps

1540 DataNode

client.cluster.com

1544 Jps

**@Client:**ssh client:

[hadoop@client ~]$ hdfs dfs -ls viewfs:///

15/08/22 16:29:54 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where applicable

Found 2 items

-r-xr-xr-x - hadoop hadoop 0 2015-08-22 16:29 viewfs:///Finance

-r-xr-xr-x - hadoop hadoop 0 2015-08-22 16:29 viewfs:///Marketing

**Testing**

On client:

[hadoop@client ~]$ hdfs dfs -mkdir viewfs:///Finance/input

[hadoop@client ~]$ hdfs dfs -put hadoop/etc/hadoop/slaves viewfs:///Finance/input/

[hadoop@client ~]$ hdfs dfs -ls viewfs:///Finance/input   
-rw-r--r-- 3 hadoop supergroup 40 2015-08-22 16:36 viewfs:///Finance/input/slaves

[hadoop@client ~]$   
FOR NN2 on Client side:

[hadoop@client ~]$ hdfs dfs -mkdir viewfs:///Marketing/markettest

[hadoop@client ~]$

[hadoop@client ~]$

[hadoop@client ~]$ hdfs dfs -ls viewfs:///Marketing/markettest

[hadoop@client ~]$

[hadoop@client ~]$

[hadoop@client ~]$

[hadoop@client ~]$ hdfs dfs -put hadoop/etc/hadoop/core-site.xml viewfs:///Marketing/markettest

[hadoop@client ~]$ hdfs dfs -ls viewfs:///Marketing/markettest

-rw-r--r-- 3 hadoop supergroup 1182 2015-08-22 16:40 viewfs:///Marketing/markettest/core-site.xml

Stop nn2 and you should still be able to view Finance data as it is mapped on nn1.