Hadoop Installation:

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Wrap up


HADOOP
BIG DATA
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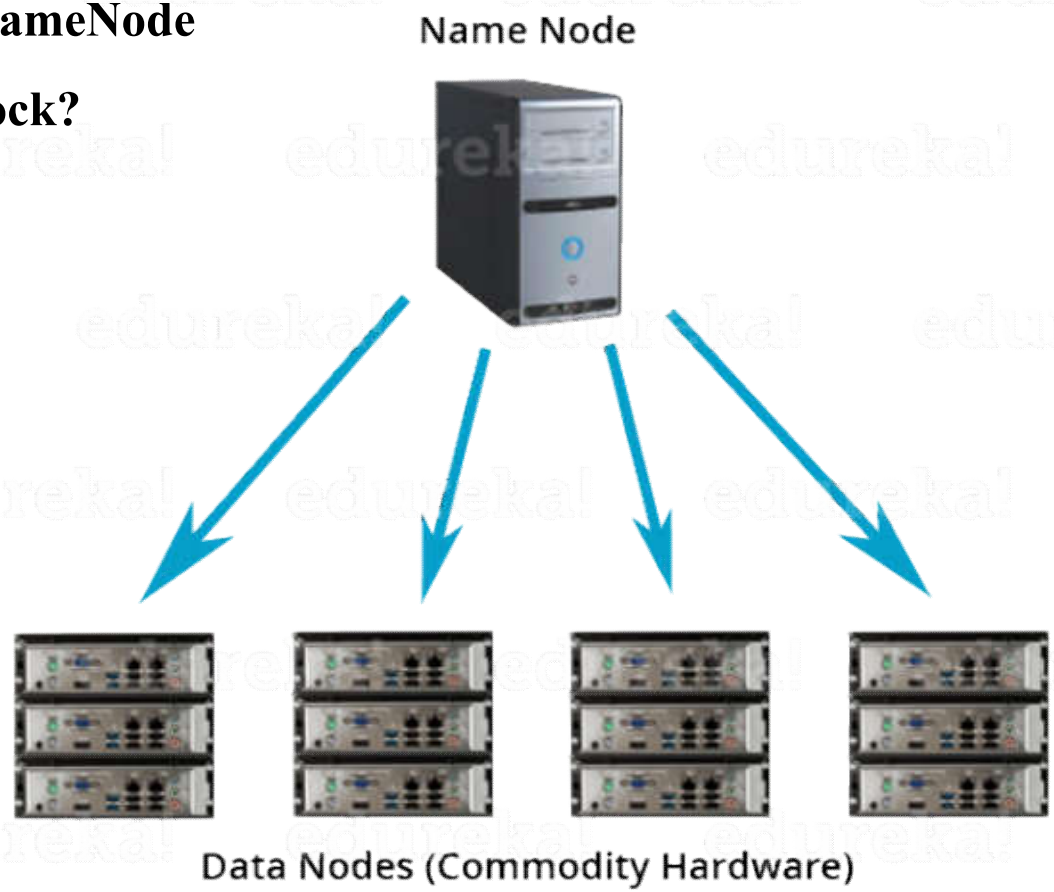
System Topology :

HDFS Master/Slave Architecture

NameNode, DataNode and

Secondary NameNode

What is a block?



Installation Mode :

Hadoop Installation Mode:

Local standalone mode:

Pseudo-distributed mode:

Fully distributed mode:

Hadoop Installation :

Hadoop Installation:

Define Hadoop System Topology

- Master Node: IP=
- Slave Node#1: IP=
- Slave Node#2: IP=
- Slave Node#3: IP=

Hadoop Installation :

Hadoop Installation:

#Define Hadoop Instance Directory

- Main Package Directory : /usr/local/hadoop
- Data Directory : /var/hadoop_data/namenode

  : /var/hadoop_data/datanode
- Log file Directory : /var/log/hadoop

Hadoop Installation:

#Hadoop Configuration Review:

Core-site.xml

```
<configuration>
    <property>
        <name>fs.defaultFS</name>
        <value>hdfs://localhost:9000</value>
    </property>
    <property>
        <name>hadoop.proxyuser.root.hosts</name>
        <value>*</value>
    </property>
    <property>
        <name>hadoop.proxyuser.root.groups</name>
        <value>*</value>
    </property>
</configuration>
```

Hadoop Installation:

#Hadoop Configuration Review:

hdfs-site.xml

```xml
<configuration>
    <property>
        <name>dfs.replication</name>
        <value>1</value>
    </property>
    <property>
        <name>dfs.namenode.name.dir</name>
        <value>file:/var/hadoop_data/namenode</value>
    </property>
    <property>
        <name>dfs.datanode.data.dir</name>
        <value>file:/var/hadoop_data/datanode</value>
    </property>
    <property>
        <name>dfs.namenode.acls.enabled</name>
        <value>true</value>
    </property>

</configuration>
```

Hadoop Installation:

#Hadoop Configuration Review:

yarn-site.xml

```xml
<configuration>
<!-- Site specific YARN configuration properties -->
    <property>
        <name>yarn.resourcemanager.hostname</name>
        <value>localhost</value>
    </property>
    <property>
        <name>yarn.resourcemanager.scheduler.address</name>
        <value>localhost:8030</value>
    </property>
    <property>
        <name>yarn.resourcemanager.resource-tracker.address</name>
        <value>localhost:8031</value>
    </property>
    <property>
        <name>yarn.resourcemanager.address</name>
        <value>localhost:8032</value>
    </property>
    <property>
        <name>yarn.resourcemanager.admin.address</name>
        <value>localhost:8033</value>
    </property>
    <property>
        <name>yarn.resourcemanager.webapp.address</name>
        <value>localhost:8088</value>
    </property>
    <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>
</configuration>
```

Hadoop Installation:

#Hadoop Configuration Review:

mapred-site.xml

```
<configuration>
    <property>
        <name>mapreduce.framework.name</name>
        <value>yarn</value>
    </property>
</configuration>
```

Hadoop Installation:

Initial HDFS : HDFS Formatting

```
$hadoop namenode -format
```

Post Test Installation:

How to Start&Stop Hadoop :

- start-dfs.sh , start-yarn.sh
- stop-yarn.sh , stop-dfs.sh

UbuntuServer [Running] - Oracle VM VirtualBox

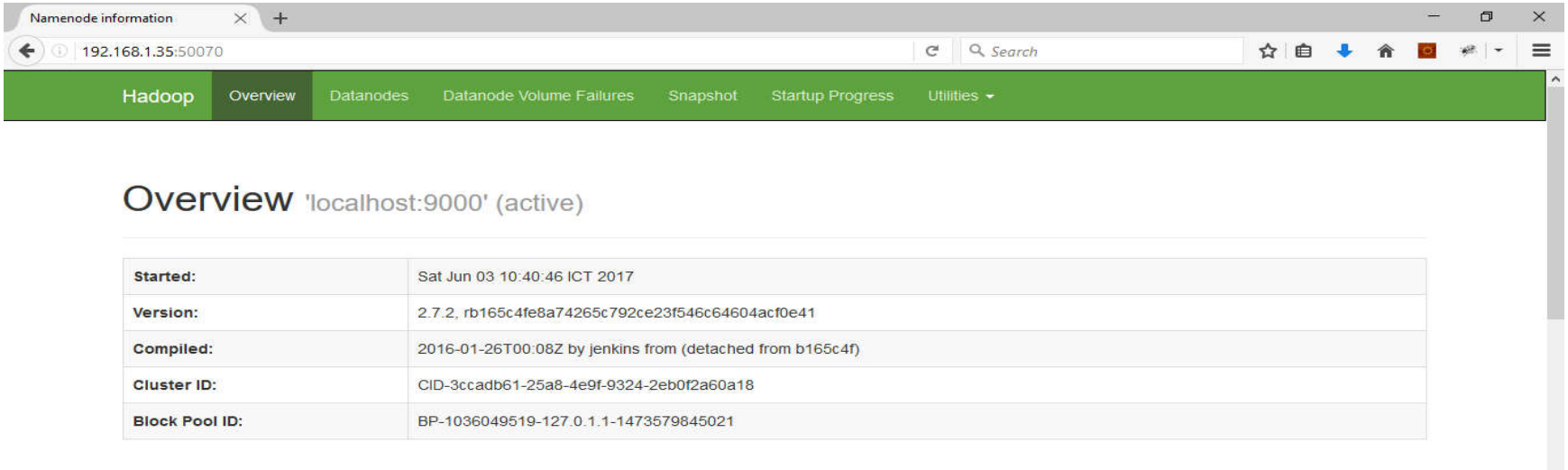
File Machine View Input Devices Help

```
auoychai@ubtserver:/usr/local/hadoop/share/hadoop/mapreduce$ start-dfs.sh
Starting namenodes on [localhost]
localhost: starting namenode, logging to /var/log/hadoop/hadoop-auoychai-namenode-ubtserver.out
localhost: starting datanode, logging to /var/log/hadoop/hadoop-auoychai-datanode-ubtserver.out
Starting secondary namenodes [0.0.0.0]
0.0.0.0: starting secondarynamenode, logging to /var/log/hadoop/hadoop-auoychai-secondarynamenode-ub
tserver.out
auoychai@ubtserver:/usr/local/hadoop/share/hadoop/mapreduce$ start-yarn.sh
starting yarn daemons
starting resourcemanager, logging to /var/log/hadoop/yarn-auoychai-resourcemanager-ubtserver.out
localhost: starting nodemanager, logging to /var/log/hadoop/yarn-auoychai-nodemanager-ubtserver.out
auoychai@ubtserver:/usr/local/hadoop/share/hadoop/mapreduce$
auoychai@ubtserver:/usr/local/hadoop/share/hadoop/mapreduce$ jps
6398 NameNode
6932 ResourceManager
6542 DataNode
6775 SecondaryNameNode
7389 Jps
7077 NodeManager
auoychai@ubtserver:/usr/local/hadoop/share/hadoop/mapreduce$ _
```

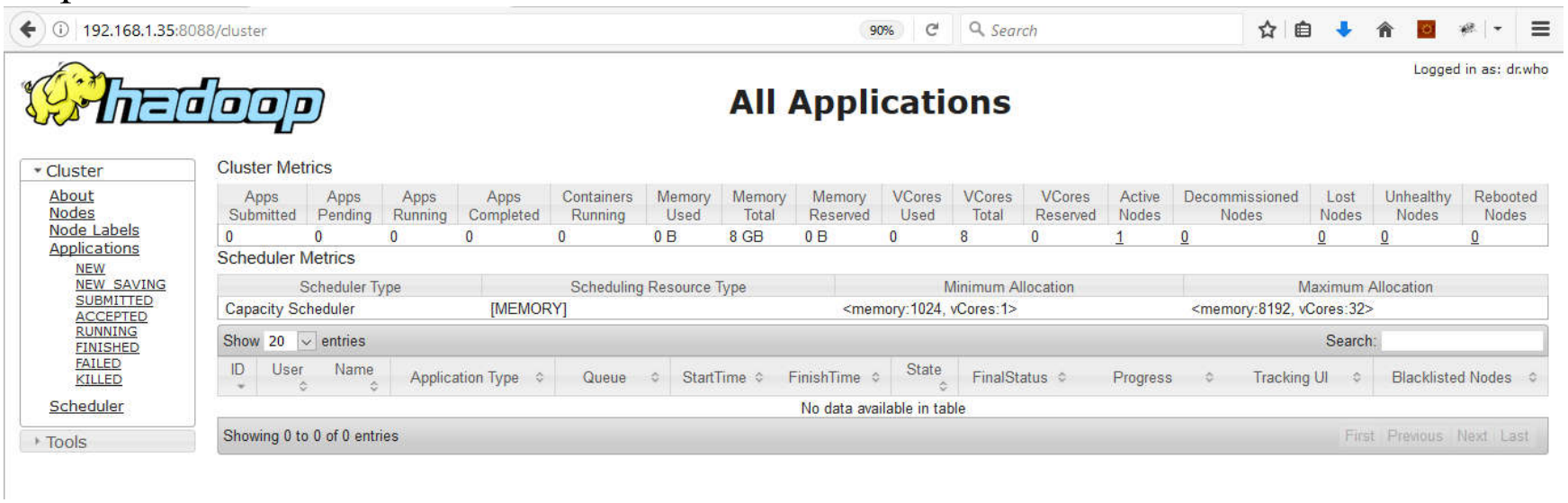
Web UI: <IP>:50070

Post Test Installation:

http://< IP >:50070/



http://< IP >:8088



Hand-On Plan:

A). Pseudo-distributed mode:

B). Fully distributed mode:

Download & Install Hadoop : Pseudo-distributed mode

- Update Package
- Setup SSH
- Setup Java
- Setup Hadoop

Download & Install Hadoop :

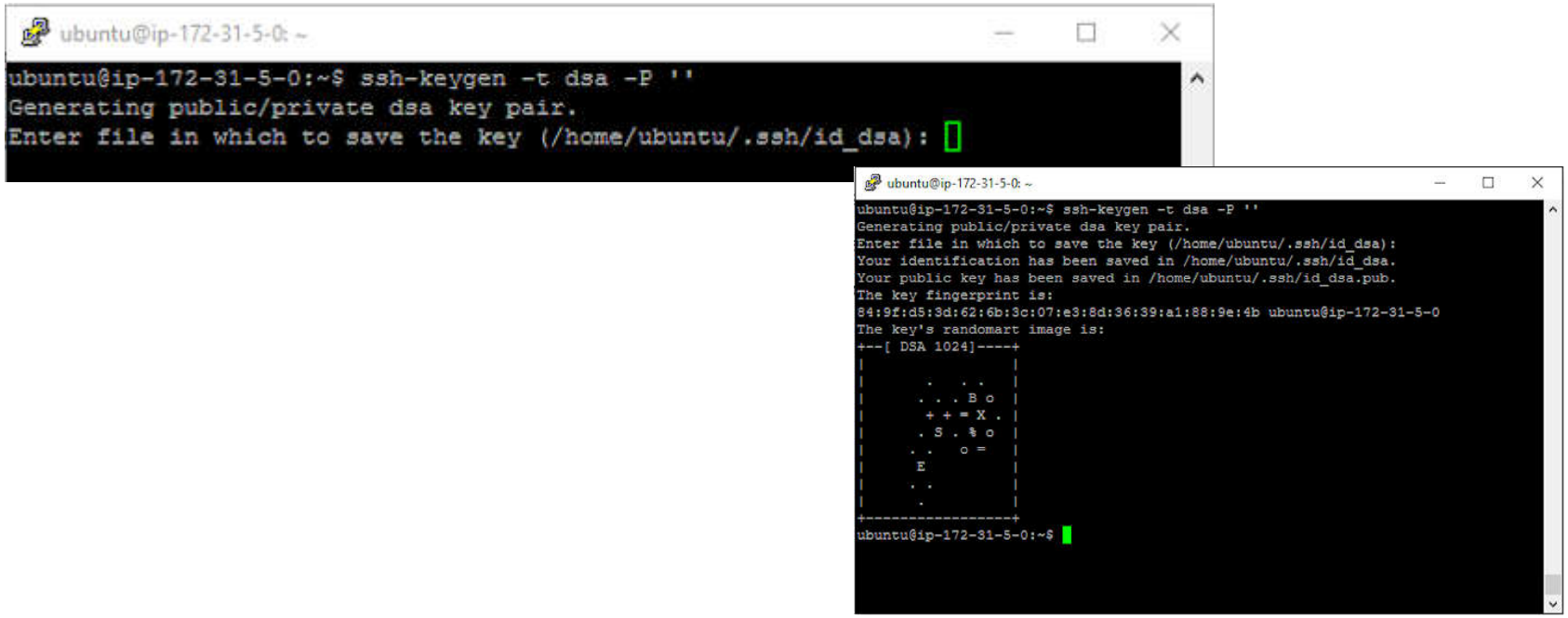
- Update Package

  sudo apt-get update

- Setup SSH

  sudo apt-get install –y openssh-server

  ssh-keygen –t dsa –P’’



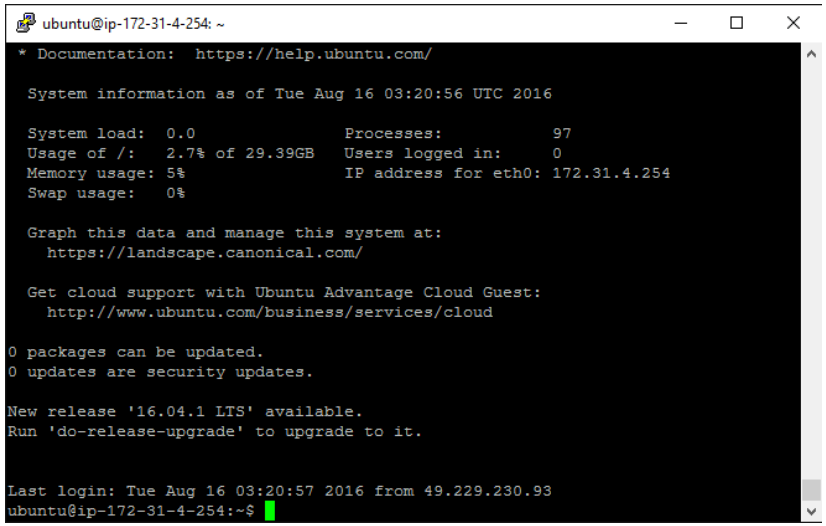
Download & Install Hadoop :

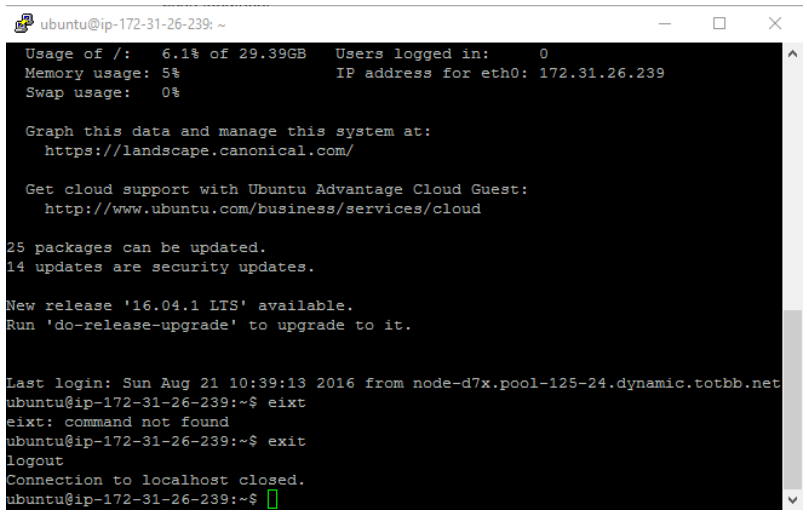
- Setup SSH

  -- โหลด Public Key เข้า Key-Store

  $cat .ssh/id_data.pub >> .ssh/authorized_key

  $ssh localhost





Download & Install Hadoop :

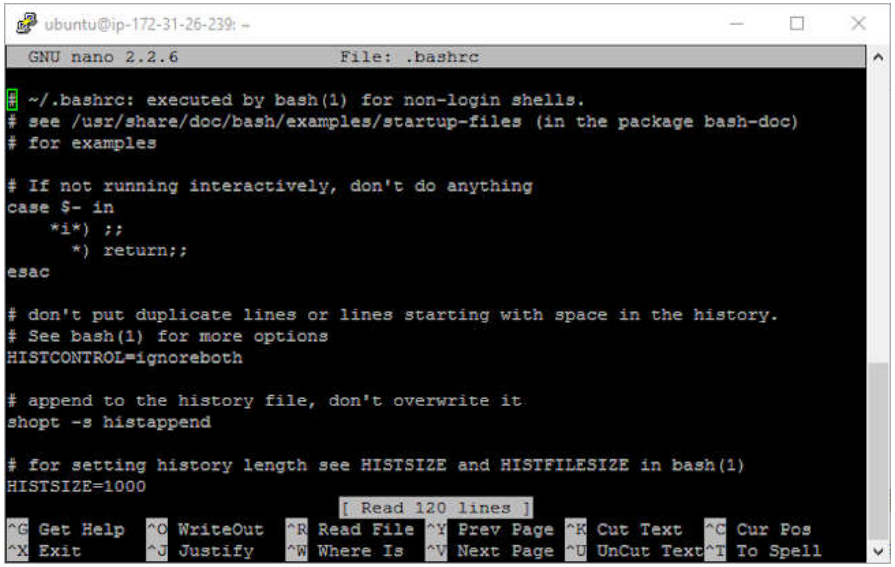
- Setup Java

  sudo apt-get install –y openjdk-7-jdk

  -- Add environment variable ที่ไฟล์ .bashrc

  export JAVA_HOME = usr/lib/jvm/java-7-openjdk-amd64

  export PATH=$PATH:$JAVA_HOME/bin



Download & Install Hadoop :

- Setup Hadoop

ii-1). Download Hadoop

wget http://mirror.cc.columbia.edu/pub/software/apache/hadoop/common/hadoop-2.7.2/hadoop-2.7.2.tar.gz

ii-2). สร้าง Folder สำหรับให้ Hadoop พิมพ์คำสั่งบรรทัดต่อไปนี้ที่หน้าจอ Console

```
sudo mkdir –p /usr/local/Hadoop  // โฟล์เดอร์สำหรับ Hadoop
sudo chown ubuntu:ubuntu –R /usr/local/hadoop
sudo mkdir /var/log/Hadoop  // โฟล์เดอร์สำหรับ Log file ของ Hadoop
sudo chown –R ubuntu:ubuntu  /var/log/hadoop
sudo mkdir –p /var/hadoop_data // โฟล์เดอร์สำหรับ Data file ที่ HDFS จัดการ
sudo mkdir –p /var/hadoop_data/namenode
sudo mkdir –p /var/hadoop_data/datanode
sudo chown ubuntu:ubuntu –R /var/hadoop_data
```

Download & Install Hadoop :

- Setup Hadoop

ii-3). Install Hadoop

tar –xvf hadoop-2.7.2.tar.gz

sudo mv ./hadoop-2.7.2/* /usr/local/hadoop

sudo chown ubuntu:ubuntu –R /usr/local/hadoop

ii-4). Setup Hadoop Variable Environment

เพิ่ม Environment Variable ให้กับ Hadoop ลงใน .bashrc file ตามนี้ ด้วยการพิมพ์คำสั่ง nano .bashrc เพิ่ม 2 บรรทัดด้านล่างลงไปตามนี้

export HADOOP_HOME=/usr/local/hadoop

export PATH=$PATH:$HADOOP_HOME/bin

export PATH=$PATH:$HADOOP_HOME/sbin

ii-5). แก้ไข script สำหรับกำหนด Environment Variable ให้กับ Hadoop ที่ไฟล์ hadoop-env.sh ที่อยู่ใน /usr/local/hadoop/etc/hadoop โดยพิมพ์ nano hadoop-env.sh และ เพิ่มคำสั่ง 2 บรรทัดด้านล่างนี้ แสดงตามรูปที่ ii5-1

export JAVA_HOME=/usr/lib/jvm/java-7-openjdk-amd64

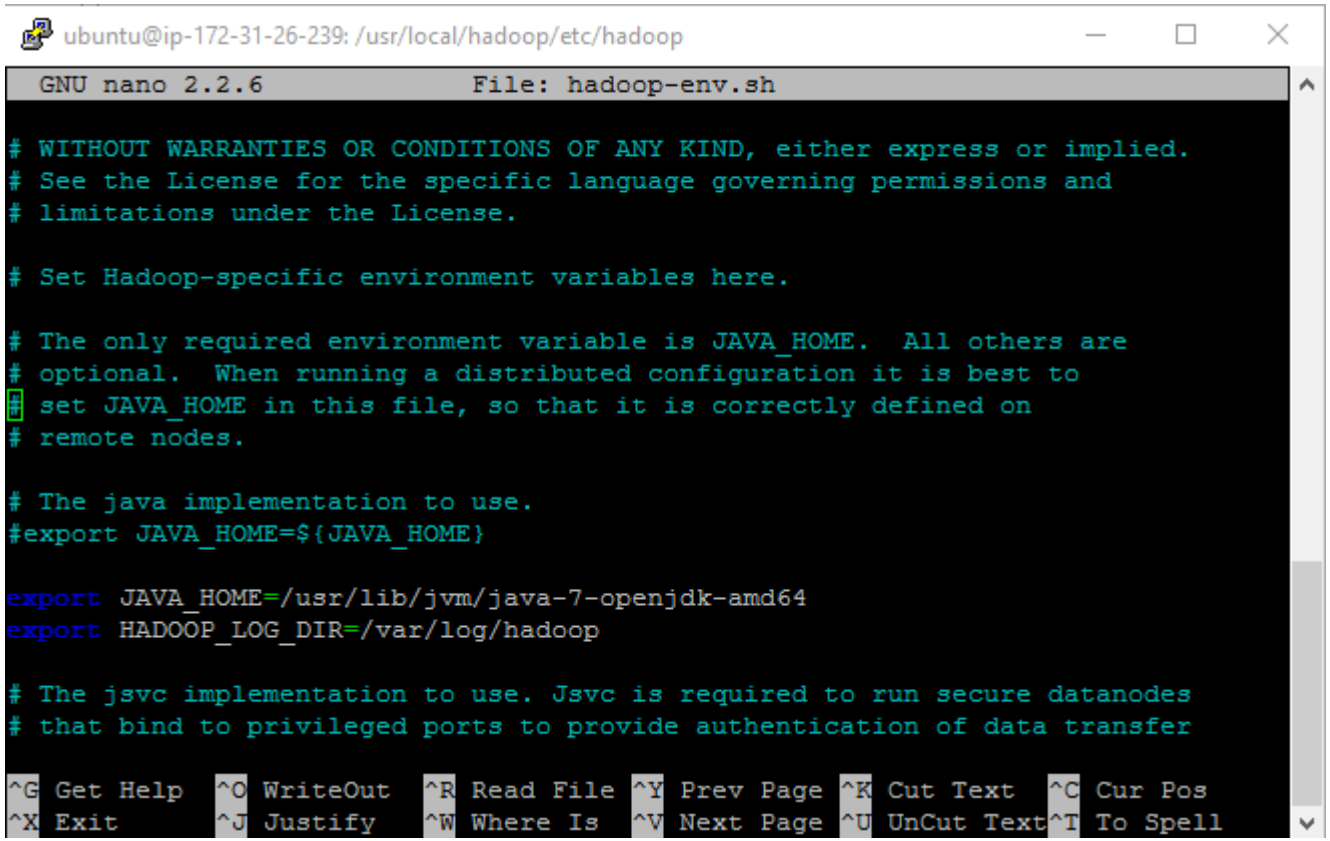
export HADOOP_LOG_DIR=/var/log/hadoop

Download & Install Hadoop :

ii-5). แก้ไข script สำหรับกำหนด Environment Variable ให้กับ Hadoop ที่ไฟล์ hadoop-env.sh ที่อยู่ใน /usr/local/hadoop/etc/hadoop โดยพิมพ์ nano hadoop-env.sh

export JAVA_HOME=/usr/lib/jvm/java-7-openjdk-amd64

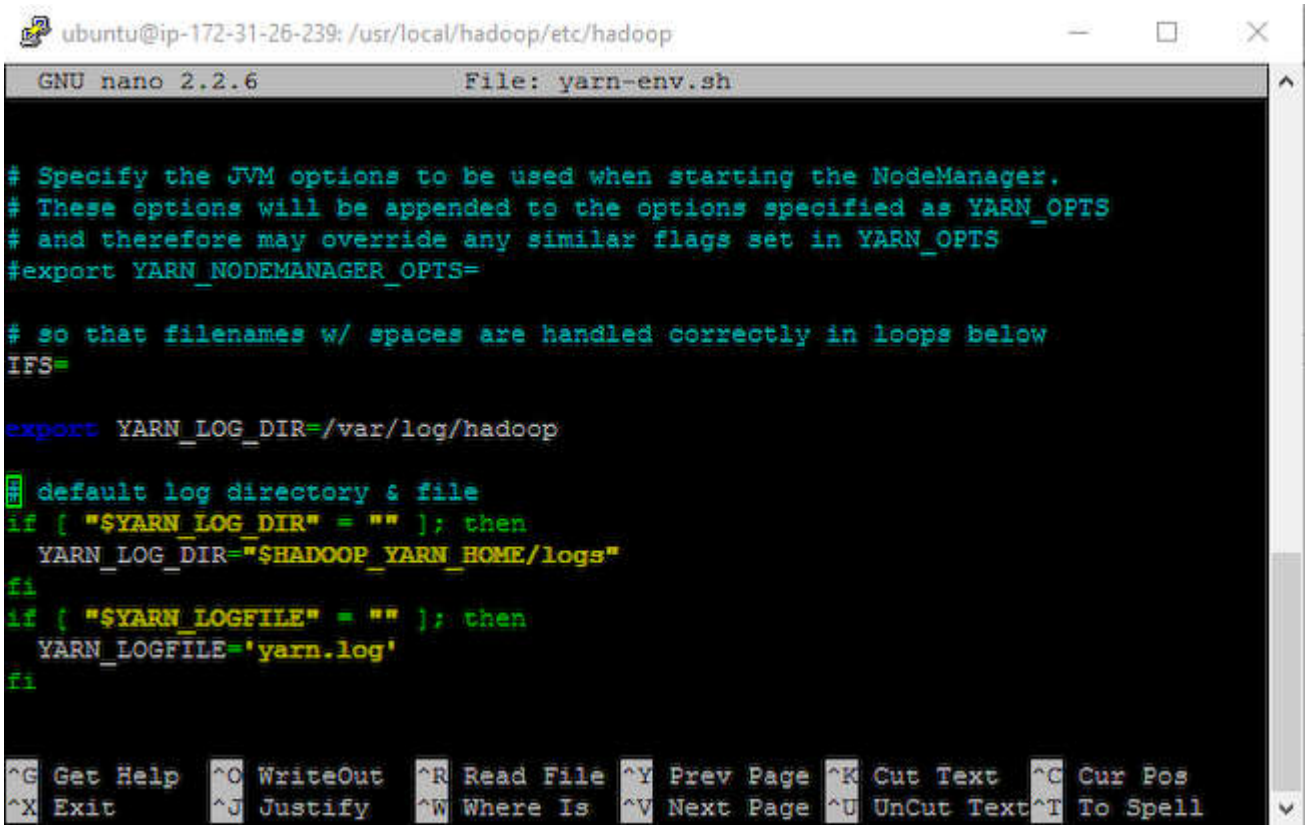
export HADOOP_LOG_DIR=/var/log/hadoop



Download & Install Hadoop :

ii-6). แก้ไข shell script สำหรับกำหนด Environment Variable ให้กับ Yarn ที่ไฟล์ yarn-env.sh ที่อยู่ใน /usr/local/hadoop/etc/hadoop โดย nano yarn-env.sh

export YARN_LOG_DIR = /var/log/hadoop



Initial HFDS :

ii-8). Format ระบบไฟล์ (ภาพเหมือนกับเรา Format Harddisk)

```
Last login: Sun Aug 21 11:52:06 2016 from node-d7x.pool-125-24.dynamic.totbb.net
ubuntu@ip-172-31-26-239:~$ cd /usr/local/hadoop/etc/hadoop/
ubuntu@ip-172-31-26-239:/usr/local/hadoop/etc/hadoop$ hdfs namenode -format
```

```
16/08/27 02:53:36 INFO util.GSet: capacity      = 2^15 = 32768 entries
Re-format filesystem in Storage Directory /var/hadoop_data/namenode ? (Y or N) Y
16/08/27 02:53:41 INFO namenode.FSImage: Allocated new BlockPoolId: BP-903428081
-172.31.26.239-1472266421834
16/08/27 02:53:41 INFO common.Storage: Storage directory /var/hadoop_data/nameno
de has been successfully formatted.
16/08/27 02:53:42 INFO namenode.NNStorageRetentionManager: Going to retain 1 ima
ges with txid >= 0
16/08/27 02:53:42 INFO util.ExitUtil: Exiting with status 0
16/08/27 02:53:42 INFO namenode.NameNode: SHUTDOWN_MSG:
/************************************************************
SHUTDOWN_MSG: Shutting down NameNode at ip-172-31-26-239.us-west-2.compute.inter
nal/172.31.26.239
************************************************************/
ubuntu@ip-172-31-26-239:/usr/local/hadoop/etc/hadoop$
```

Start&Stop Hadoop :

ii-9). Start Hadoop (ที่ /usr/local/hadoop/etc/hadoop)

ii9-1. ทำการ Start HDFS ด้วยการ Run Script นี้ start-dfs.sh และ สังเกตดูว่า Process NameNode และ DataNode ทำงานอยู่ด้วย คำสั่ง jps

ii9-2. ทำการ Start YARN ด้วยการ Run Script นี้ start-yarn.sh และ สังเกตดูว่า Process ResourceManager และ NodeManager ทำงานอยู่ด้วยคำสั่ง jps

ii-11). Stop Hadoop

1). stop-yarn.sh และ 2). stop-dfs.sh ที่ Command Console และ เมื่อขอดู Hadoop Process ด้วยคำสั่ง jps

Hello MapReduce :

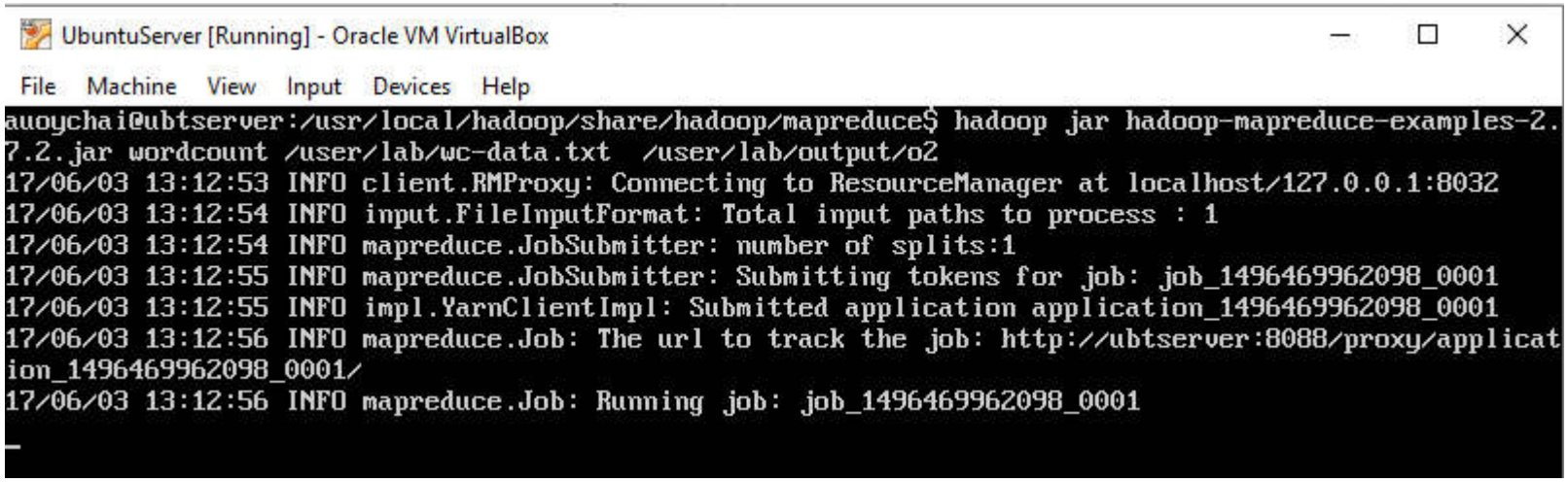
Package Directory: $HADOOP_HOME/share/hadoop/mapreduce

Execute Command :

$HADOOP_HOME/share/hadoop/mapreduce$ hadoop jar hadoop-mapreduce-examples-2.7.2.jar pi 10 1000

*** Observe terminal screen ***

$HADOOP_HOME/share/hadoop/mapreduce$ hadoop jar hadoop-mapreduce-examples-2.7.2.jar wordcount /user/lab/wc-data.txt /user/lab/output/o2



Download & Install Hadoop : Fully distributed mode

- X


The End
Big data
Shift
Del
Prt