环境搭建

一、 配置主机

1. 配置 hosts 文件
   vi /etc/hosts
   添加以下内容并保存：（删除有 localhost 的行）
   192.168.114.135 master

   注：搭建伪分布式只需设置一个

二、 关闭防火墙

1. 执行命令: service iptables stop
   验证: service iptables status

三、 安装 ssh，Xshell，FileZilla

1. 安装 ssh
   安装 ssh：apt-get install openssh-server
   启动 ssh：/etc/init.d/ssh start
   检测 SSH 进程是否已经开启：ps -e| grep sshd

2. 查看服务器 ip：ifconfig
3. 安装使用 Xshell
   打开 Xshell——新建会话
   输入用户名和密码，连接成功
   打开 filezilla 新建站点并连接
   上传所需安装包

四、 JDK 安装

（安装包放在/home/lxy/software 下，软件放在/home/lxy/install 下）

1. 解压 jdk:
   sudo tar -zxvf jdk-8u251-linux-x64.tar.gz -C ../install
   sudo mv jdk-8u251 jdk
2. 配置环境变量：sudo vi /etc/profile
3. 添加以下内容并保存
   export JAVA_HOME=/home/lxy/install/jdk

export JRE_HOME=$JAVA_HOME/jre
export CLASSPATH=.:$JAVA_HOME/lib:$JRE_HOME/lib
export PATH=$PATH:$JAVA_HOME/bin:$JRE_HOMEcd /bin

```
  done
  unset i
fi

export JAVA_HOME=/home/lxy/install/jdk
export JRE_HOME=$JAVA_HOME/jre
export CLASSPATH=.:$JAVA_HOME/lib:$JRE_HOME/lib
export PATH=$PATH:$JAVA_HOME/bin:$JRE_HOME/bin
```

4. 使环境配置生效: source /etc/profile
5. 查看是否配置成功: java -version

```
lxy@master:~/install/jdk$ java -version
java version "1.8.0_251"
Java(TM) SE Runtime Environment (build 1.8.0_251-b08)
Java HotSpot(TM) 64-Bit Server VM (build 25.251-b08, mixed mode)
```

五、 ssh 免密登录

1. 设置免密登录：ssh-keygen -t rsa（一直回车即可）
2. 导入 authorized_keys：cat ~/.ssh/id_rsa.pub >> ~/.ssh/authorized_keys
3. 检测：ssh localhost

六、 搭建伪分布式 Hadoop

1. 配置 Hadoop 环境
   1) 解压：
      tar -zxvf hadoop-2.7.7.tar.gz -C ../install
      sudo mv hadoop-2.7.7 hadoop
   2) 配置环境：vi /etc/profile 增加内容如下:
      export HADOOP_HOME=/home/lxy/install/hadoop
      export PATH=.:$HADOOP_HOME/bin:$HADOOP_HOME/sbin:$PATH

```
    fi
  done
  unset i
fi

export JAVA_HOME=/home/lxy/install/jdk
export JRE_HOME=$JAVA_HOME/jre
export CLASSPATH=.:$JAVA_HOME/lib:$JRE_HOME/lib
export PATH=$PATH:$JAVA_HOME/bin:$JRE_HOME/bin

export HADOOP_HOME=/home/lxy/install/hadoop
export PATH=.:$HADOOP_HOME/bin:$HADOOP_HOME/sbin:$PATH
```

   3) 使配置生效：source /etc/profile

4) 验证：hadoop

```
lxy@master:~/install$ hadoop
Usage: hadoop [--config confdir] [COMMAND | CLASSNAME]
  CLASSNAME            run the class named CLASSNAME
 or
  where COMMAND is one of:
  fs                   run a generic filesystem user client
  version              print the version
  jar <jar>            run a jar file
                       note: please use "yarn jar" to launch
                             YARN applications, not this command.
  checknative [-a|-h]  check native hadoop and compression libraries availability
  distcp <srcurl> <desturl> copy file or directories recursively
  archive -archiveName NAME -p <parent path> <src>* <dest> create a hadoop archive
  classpath            prints the class path needed to get the
  credential           interact with credential providers
                       Hadoop jar and the required libraries
  daemonlog            get/set the log level for each daemon
  trace                view and modify Hadoop tracing settings
```

2. 修改 conf 目录下的配置文件 hadoop-env.sh、core-site.xml、hdfs-site.xml、mapred-site.xml

1) 进入文件目录

```
lxy@master:~/install/hadoop$ ls
bin  etc  include  lib  libexec  LICENSE.txt  NOTICE.txt  README.txt  sbin  share
lxy@master:~/install/hadoop$ cd etc/hadoop/
lxy@master:~/install/hadoop/etc/hadoop$ ls
capacity-scheduler.xml      httpfs-env.sh            mapred-env.sh
configuration.xsl           httpfs-log4j.properties  mapred-queues.xml.template
container-executor.cfg      httpfs-signature.secret  mapred-site.xml.template
core-site.xml               httpfs-site.xml          slaves
hadoop-env.cmd              kms-acls.xml             ssl-client.xml.example
hadoop-env.sh               kms-env.sh               ssl-server.xml.example
hadoop-metrics2.properties  kms-log4j.properties     yarn-env.cmd
hadoop-metrics.properties   kms-site.xml             yarn-env.sh
hadoop-policy.xml           log4j.properties         yarn-site.xml
hdfs-site.xml               mapred-env.cmd
```

2) sudo vi hadoop-env.sh

export JAVA_HOME=/home/lxy/install/jdk

```
# The java implementation to use.
export JAVA_HOME=/home/lxy/install/jdk
```

3) sudo vi core-site.xml （黄色强调部分改为自己主机名）

```
        <property>
            <name>fs.defaultFS</name>
            <value>hdfs://master:8020</value>
            <!--value 填的是默认文件系统的 URL 地址，格式是“hdfs://host:port”,host 为 ip 或者主机名，port 默认为 8020-->
        </property>
        <property>
            <name>hadoop.tmp.dir</name>
            <value>/home/lxy/install/hadoop/tmp</value>
            <!--sda-->
        </property>
    <!--如果需要用到 spark 的话，需要在 core-site.xml 中加入如下:【否则会出错】-->

    <property>
            <name>hadoop.proxyuser.root.hosts</name>
            <value>*</value>
```

</property>
<property>
<name>hadoop.proxyuser.root.groups</name>
<value>*</value>
</property>

```
<configuration>


<property>
        <name>fs.defaultFS</name>
        <value>hdfs://master:8020</value>
        <!--value填的是默认文件系统的URL地址，格式是“hdfs://host:port”,host为ip或者主机名，port默认为8020-->
    </property>
    <property>
        <name>hadoop.tmp.dir</name>
        <value>/home/lxy/install/hadoop/tmp</value>
        <!--sda-->
    </property>

<!--如果需要用到spark的话，需要在core-site.xml中加入如下：【否则会出错】-->

<property>
        <name>hadoop.proxyuser.root.hosts</name>
        <value>*</value>
</property>
<property>
        <name>hadoop.proxyuser.root.groups</name>
        <value>*</value>
</property>


</configuration>
```

hadoop 目录下创建 777 权限 tmp：mkdir -m　777 tmp

4) sudo vi hdfs-site.xml

<configuration>
<property>
<name>dfs.replication</name>
<value>1</value>
<!--默认为 3，搭建伪分布式时只有一个节点、改为 1 即可
-->
</property>
</configuration>

```
<configuration>

<property>
        <name>dfs.replication</name>
        <value>1</value>
        <!--默认为3，搭建伪分布式时只有一个节点、改为1即可-->
    </property>


</configuration>
~
```

```
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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.namenode.http-address</name>
                    <value>master:50070</value>
                </property>
                   <property>
                           <name>dfs.namenode.secondary.http-address</name>
                    <value>master:50090</value>
                    </property>
                <property>
                     <name>dfs.replication</name>
                       <value>1</value>
                    </property>
                <property>
                        <name>dfs.permissions</name>
                     <value>false</value>
                </property>
                   <property>
                       <name>dfs.namenode.name.dir</name>
                       <value>/usr/local/hadoop/name</value>
                   </property>
                   <property>
                       <name>dfs.datanode.data.dir</name>
                       <value>/usr/local/hadoop/data</value>
                   </property>
</configuration>
```

5) 先：cp mapred-site.xml.template mapred-site.xml

再：sudo vi mapred-site.xml

```
<configuration>
        <property>
            <name>mapreduce.framework.name</name>
            <value>yarn</value>
            <!--value 默认为 local，设置为 yarn 使其运行在 YARN 框架上-->
        </property>
</configuration>
```

```
<configuration>

 <property>
        <name>mapreduce.framework.name</name>
        <value>yarn</value>
        <!--value默认为local，设置为yarn使其运行在YARN框架上-->
    </property>

</configuration>
~
```

6) sudo vi yarn-site.xml

```
<configuration>
        <property>
            <name>yarn.resourcemanager.hostname</name>
            <value>master</value>
            <!--设置资源管理器的主机，设置为主机名或者 IP-->
        </property>
```

```
        <property>
            <name>yarn.nodemanager.aux-services</name>
            <value>mapreduce_shuffle</value>
            <!--设置节点管理器的辅助服务器，默认为空，设置为
mapreduce_shuffle-->
        </property>
</configuration>
```

```
<configuration>


    <property>
        <name>yarn.resourcemanager.hostname</name>
        <value>master</value>
        <!--设置资源管理器的主机，设置为主机名或者IP-->
    </property>
    <property>
        <name>yarn.nodemanager.aux-services</name>
        <value>mapreduce_shuffle</value>
        <!--设置节点管理器的辅助服务器，默认为空，设置为mapreduce_shuffle-->
    </property>


</configuration>
```

```
lxy1@master:~/hadoop/hadoop-2.7.7/etc/hadoop$ vim /core-site.xml
lxy1@master:~/hadoop/hadoop-2.7.7/etc/hadoop$ sudo vim /core-site.xml
[sudo] password for lxy1:
lxy1@master:~/hadoop/hadoop-2.7.7/etc/hadoop$ sudo vim /hdfs-site.xml
lxy1@master:~/hadoop/hadoop-2.7.7/etc/hadoop$ sudo vim /mapred-site.xml
lxy1@master:~/hadoop/hadoop-2.7.7/etc/hadoop$ sudo vim /yarn-site.xml
```

3. 初始化：hadoop namenode -format

4. 启动:start-all.sh
5. 查看：jps

```
lxy@master:~/install/hadoop$ jps
4049 DataNode
4241 SecondaryNameNode
3894 NameNode
4843 Jps
4397 ResourceManager
4702 NodeManager
```

七、 安装 Scala

1. 使用管理员权限解压 scala
   sudo tar -zxvf scala-2.11.8.tgz -C ../install
   在 install 目录：
   sudo mv scala-2.11.8 scala
2. 配置环境变量
   vi /etc/profile
   添加以下内容并保存：
   export SCALA_HOME=/home/lxy/install/scala
   export PATH=$PATH:$SCALA_HOME/bin

3. 使配置生效&查验，如下：

source /etc/profile

```
lxy@master:~/install$ sudo vi /etc/profile
lxy@master:~/install$ source /etc/profile
lxy@master:~/install$ scala -version
Scala code runner version 2.11.8 -- Copyright 2002-2016, LAMP/EPFL
lxy@master:~/install$ ^C
lxy@master:~/install$
```

八、 安装 Zookeeper

1. 解压 zookeeper：

   sudo tar -zxvf zookeeper-3.4.14.tar.gz -C ../install

   sudo mv zookeeper-3.4.14 zookeeper
2. 创建用于存储数据和日志的文件夹

   cd /home/lxy/install/zookeeper

   sudo mkdir -m 777 zkData
3. 创建配置文件

```
export JAVA_HOME=/home/lxy/install/jdk
export JRE_HOME=$JAVA_HOME/jre
export CLASSPATH=.:$JAVA_HOME/lib:$JRE_HOME/lib
export PATH=$PATH:$JAVA_HOME/bin:$JRE_HOME/bin

export HADOOP_HOME=/home/lxy/install/hadoop
export PATH=.:$HADOOP_HOME/bin:$HADOOP_HOME/sbin:$PATH

export ZOOKEEPER_HOME=/home/lxy/install/zookeeper
export PATH=$PATH:$ZOOKEEPER_HOME/bin
export ZOO_LOG_DIR=/home/lxy/install/zookeeper/log

export HBASE_HOME=/home/lxy/install/hbase
export PATH=$PATH:$HBASE_HOME/bin

export SCALA_HOME=/home/lxy/install/scala
export PATH=$PATH:$SCALA_HOME/bin

export SPARK_HOME=/home/lxy/install/spark
export PATH=$PATH:$SPARK_HOME/bin:$SPARK_HOME/sbin
```

   cd conf

   sudo mv zoo_sample.cfg zoo.cfg

   sudo vi zoo.cfg

   dataDir=/home/lxy/install/zookeeper/zkData

```
# the directory where the snapshot is stored.
# do not use /tmp for storage, /tmp here is just
# example sakes.
dataDir=/home/lxy/install/zookeeper/zkData
# the port at which the clients will connect
clientPort=2181
```

4. 环境变量配置

   export ZOOKEEPER_HOME=/home/lxy/install/zookeeper

export PATH=$PATH:$ZOOKEEPER_HOME/bin
export ZOO_LOG_DIR=/home/lxy/install/zookeeper/log

```
export JAVA_HOME=/home/lxy/install/jdk
export JRE_HOME=$JAVA_HOME/jre
export CLASSPATH=.:$JAVA_HOME/lib:$JRE_HOME/lib
export PATH=$PATH:$JAVA_HOME/bin:$JRE_HOME/bin

export HADOOP_HOME=/home/lxy/install/hadoop
export PATH=.:$HADOOP_HOME/bin:$HADOOP_HOME/sbin:$PATH

export ZOOKEEPER_HOME=/home/lxy/install/zookeeper
export PATH=$PATH:$ZOOKEEPER_HOME/bin
export ZOO_LOG_DIR=/home/lxy/install/zookeeper/log

export HBASE_HOME=/home/lxy/install/hbase
export PATH=$PATH:$HBASE_HOME/bin

export SCALA_HOME=/home/lxy/install/scala
export PATH=$PATH:$SCALA_HOME/bin

export SPARK_HOME=/home/lxy/install/spark
export PATH=$PATH:$SPARK_HOME/bin:$SPARK_HOME/sbin
```

5. 启动 zookeeper：（摘自尚硅谷文档）

（1）启动 Zookeeper

```
[atguigu@hadoop102 zookeeper-3.4.10]$ bin/zkServer.sh start
```

（2）查看进程是否启动

```
[atguigu@hadoop102 zookeeper-3.4.10]$ jps
4020 Jps
4001 QuorumPeerMain
```

（3）查看状态:

```
[atguigu@hadoop102 zookeeper-3.4.10]$ bin/zkServer.sh status
ZooKeeper JMX enabled by default
Using config: /opt/module/zookeeper-3.4.10/bin/../conf/zoo.cfg
Mode: standalone
```

（4）启动客户端:

```
[atguigu@hadoop102 zookeeper-3.4.10]$ bin/zkCli.sh
```

（5）退出客户端:

```
[zk: localhost:2181(CONNECTED) 0] quit
```

（6）停止 Zookeeper

```
[atguigu@hadoop102 zookeeper-3.4.10]$ bin/zkServer.sh stop
```

```
g session
2020-06-17 17:21:39,891 [myid:] - INFO  [main-SendThread(localhost:2181):ClientCnxn
Thread@1299] - Session establishment complete on server localhost/0:0:0:0:0:0:0:1:2
sessionid = 0x10000ac1c430000, negotiated timeout = 30000
[zk: localhost:2181(CONNECTED) 0]
WATCHER::

WatchedEvent state:SyncConnected type:None path:null

[zk: localhost:2181(CONNECTED) 0] ls /
[zookeeper]
[zk: localhost:2181(CONNECTED) 1]
```

九、 安装 Hbase

1. 解压
   sudo tar -zxvf hbase-1.3.6-bin.tar.gz -C ../install
   mv hbase-1.3.6 hbas
2. sudo vi hbase-env.sh
   export JAVA_HOME=/home/lxy/install/jdk
   export HBASE_PID_DIR=/home/lxy/install/hbase/pids
   export HBASE_MANAGES_ZK=false

3. sudo vi hbase-site.xml
   <configuration>

```
<property>
        <name>hbase.rootdir</name>
        <value>hdfs://master:9000/hbase</value>
</property>
<property>
        <name>hbase.cluster.distributed</name>
        <value>true</value>
</property>
 <!-- 0.98 后的新变动，之前版本没有.port,默认端口为 60000 -->
<property>
        <name>hbase.master.port</name>
        <value>16000</value>
</property>
<property>
        <name>hbase.zookeeper.quorum</name>
        <value>master:2181</value>
</property>
<property>
        <name>hbase.zookeeper.property.dataDir</name>
        <value>/home/lxy/install/zookeeper/zkData</value>
</property></configuration>
```

```
<configuration>

<property>
        <name>hbase.rootdir</name>
        <value>hdfs://master:9000/hbase</value>
</property>
<property>
        <name>hbase.cluster.distributed</name>
        <value>true</value>
</property>
 <!-- 0.98后的新变动，之前版本没有.port,默认端口为60000 -->
<property>
        <name>hbase.master.port</name>
        <value>16000</value>
</property>
<property>
        <name>hbase.zookeeper.quorum</name>
        <value>master:2181</value>
</property>
<property>
        <name>hbase.zookeeper.property.dataDir</name>
        <value>/home/lxy/install/zookeeper/zkData</value>
</property>


</configuration>
```

4. sudo vi regionservers

   master

```
lxy@master:~/install/hbase/conf$ sudo vi regionservers
[sudo] password for lxy:

master
```

5. 将 hadoop 的配置文件 core-site.xml 复制到 hbase 的配置文件目录中

   cp /home/lxy/install/hadoop/etc/hadoop/core-site.xml conf/

6. 配置环境

   export HBASE_HOME=/home/lxy/install/hbase

   export PATH=$PATH:$HBASE_HOME/bin

```
export JAVA_HOME=/home/lxy/install/jdk
export JRE_HOME=$JAVA_HOME/jre
export CLASSPATH=.:$JAVA_HOME/lib:$JRE_HOME/lib
export PATH=$PATH:$JAVA_HOME/bin:$JRE_HOME/bin

export HADOOP_HOME=/home/lxy/install/hadoop
export PATH=.:$HADOOP_HOME/bin:$HADOOP_HOME/sbin:$PATH

export ZOOKEEPER_HOME=/home/lxy/install/zookeeper
export PATH=$PATH:$ZOOKEEPER_HOME/bin
export ZOO_LOG_DIR=/home/lxy/install/zookeeper/log

export HBASE_HOME=/home/lxy/install/hbase
export PATH=$PATH:$HBASE_HOME/bin

export SCALA_HOME=/home/lxy/install/scala
export PATH=$PATH:$SCALA_HOME/bin

export SPARK_HOME=/home/lxy/install/spark
export PATH=$PATH:$SPARK_HOME/bin:$SPARK_HOME/sbin
```

十、 安装 spark

1. 解压 spark

   tar -xzvf spark-2.2.0-bin-hadoop2.7.tgz -C ../install

2. 改名

   mv spark-2.2.0-bin-hadoop2.7/ spark

3. 配置文件

   进入到 spark 的配置目录下（conf）

   修改 slaves.template、spark-env.sh.template、spark-defaults.conf.template 等文件的文件名

   mv slaves.template slaves

   mv spark-env.sh.template spark-env.sh

   mv spark-defaults.conf.template spark-defaults.conf

```
lxy@master:~/install/spark/conf$ ll
total 40
drwxr-xr-x  2 lxy lxy 4096 Jun 24 15:13 ./
drwxr-xr-x 12 lxy lxy 4096 Jul  1  2017 ../
-rw-r--r--  1 lxy lxy  996 Jul  1  2017 docker.properties.template
-rw-r--r--  1 lxy lxy 1105 Jul  1  2017 fairscheduler.xml.template
-rw-r--r--  1 lxy lxy 2025 Jul  1  2017 log4j.properties.template
-rw-r--r--  1 lxy lxy 7313 Jul  1  2017 metrics.properties.template
-rw-r--r--  1 lxy lxy  865 Jul  1  2017 slaves
-rw-r--r--  1 lxy lxy 1292 Jul  1  2017 spark-defaults.conf
-rwxr-xr-x  1 lxy lxy 3699 Jul  1  2017 spark-env.sh*
```

4. 修改 spark-env.sh 文件

   vi spark-env.sh

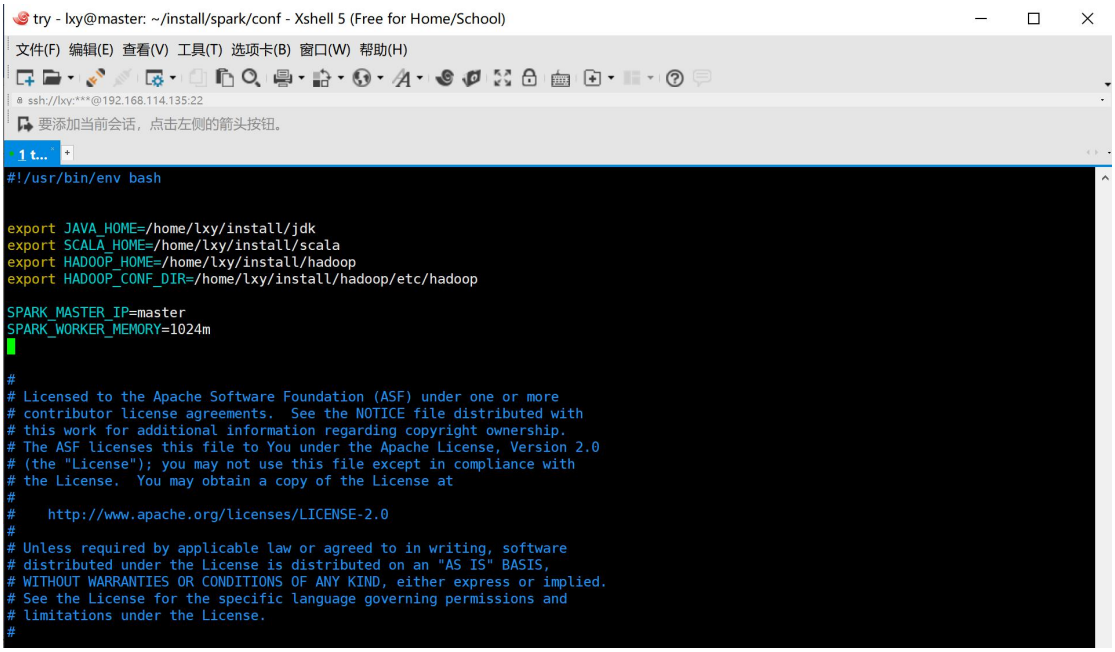
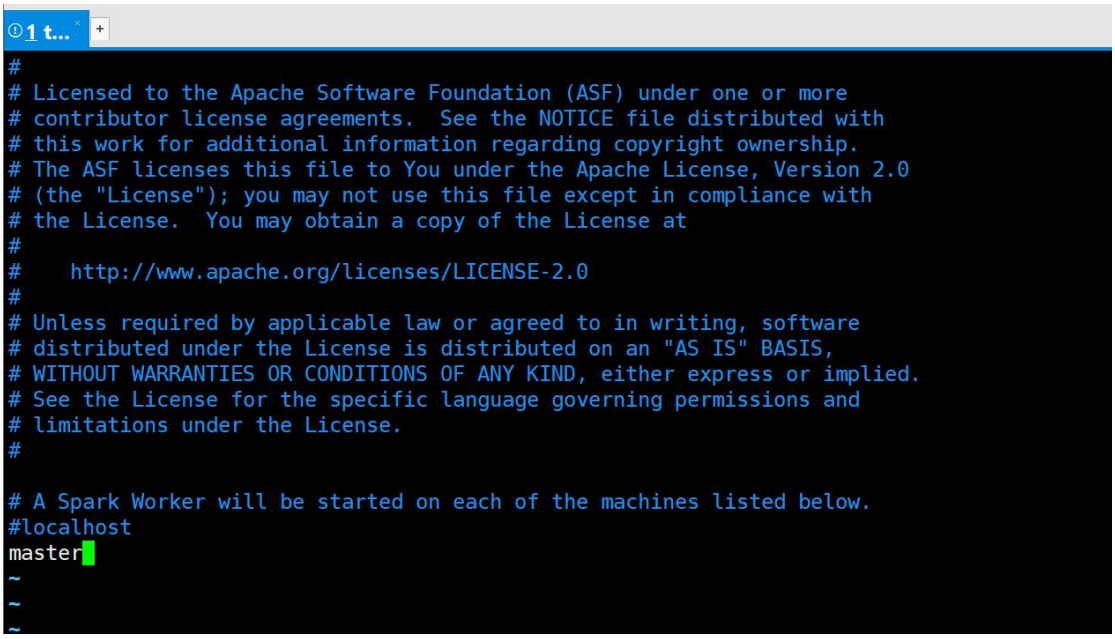
   添加一下内容并保存

   export JAVA_HOME=/home/lxy/install/jdk

   export SCALA_HOME=/home/lxy/install/scala

   export HADOOP_HOME=/home/lxy/install/hadoop

   export HADOOP_CONF_DIR=/home/lxy/install/hadoop/etc/Hadoop

SPARK_MASTER_IP=master
SPARK_WORKER_MEMORY=1024m
```




5. 修改 slaves 文件

vi slaves

添加以下内容

master




6. 配置环境变量

vi /etc/profile

添加以下内容
```

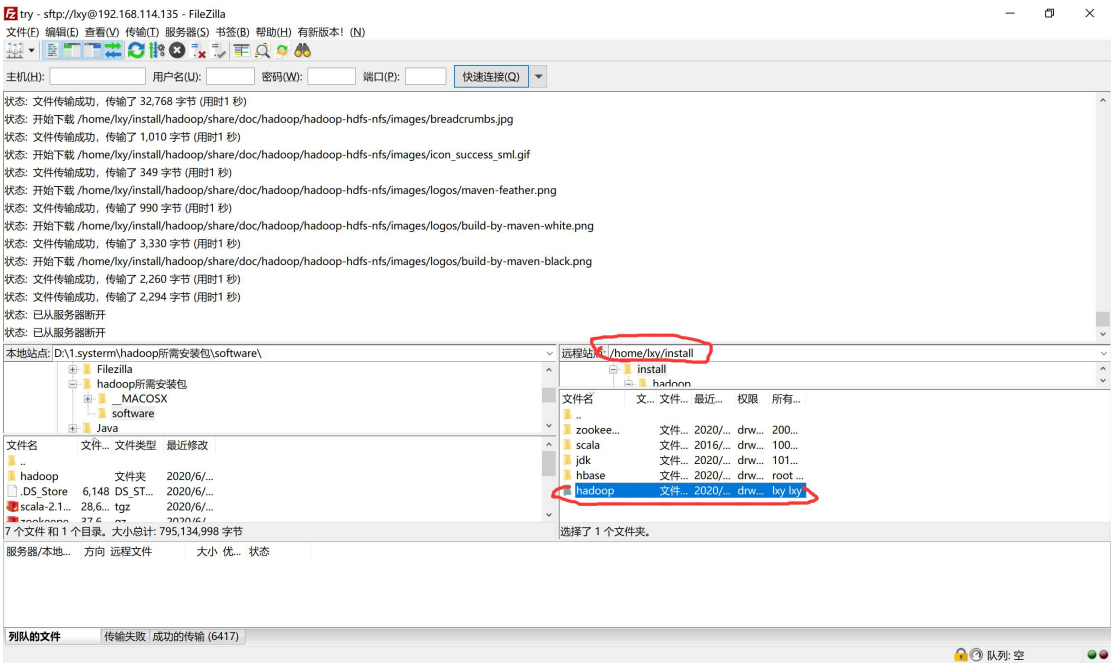
export SPARK_HOME=/home/lxy/install/spark
export PATH=$PATH:$SPARK_HOME/bin

```
export JAVA_HOME=/home/lxy/install/jdk
export JRE_HOME=$JAVA_HOME/jre
export CLASSPATH=.:$JAVA_HOME/lib:$JRE_HOME/lib
export PATH=$PATH:$JAVA_HOME/bin:$JRE_HOME/bin

export HADOOP_HOME=/home/lxy/install/hadoop
export PATH=.:$HADOOP_HOME/bin:$HADOOP_HOME/sbin:$PATH

export ZOOKEEPER_HOME=/home/lxy/install/zookeeper
export PATH=$PATH:$ZOOKEEPER_HOME/bin
export ZOO_LOG_DIR=/home/lxy/install/zookeeper/log

export HBASE_HOME=/home/lxy/install/hbase
export PATH=$PATH:$HBASE_HOME/bin

export SCALA_HOME=/home/lxy/install/scala
export PATH=$PATH:$SCALA_HOME/bin

export SPARK_HOME=/home/lxy/install/spark
export PATH=$PATH:$SPARK_HOME/bin
```

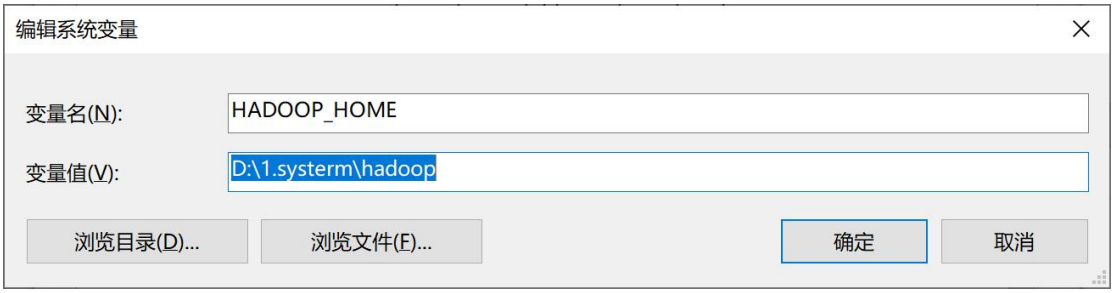
7. 使环境配置生效
   source /etc/profile

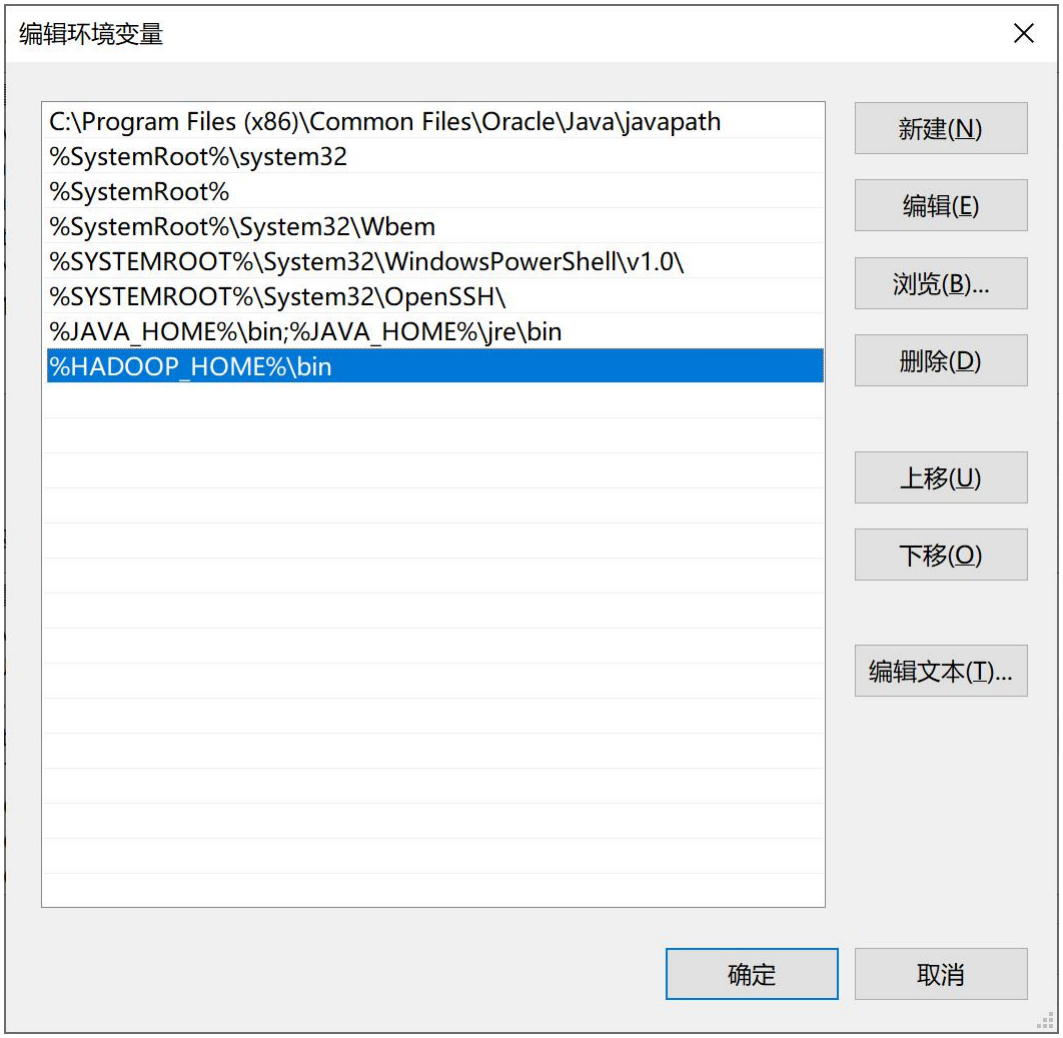
十一、 配置本机环境

1. Java 环境&下载安装 eclipse
2. Hadoop 环境，注：从 Linux 系统 down 的 Hadoop 包 bin 文件夹中缺少一些文件，可从网上下载




电脑 › Data (D:) › 1.systerm › hadoop
搜索"hadoop"
名称
修改日期
类型
大小
bin 2020/6/18 10:40 文件夹
etc 2020/6/18 10:40 文件夹
include 2020/6/18 10:40 文件夹
lib 2020/6/18 10:40 文件夹
libexec 2020/6/18 10:40 文件夹
logs 2020/6/18 10:40 文件夹
sbin 2020/6/18 10:40 文件夹
share 2020/6/18 10:40 文件夹
tmp 2020/6/18 10:40 文件夹
LICENSE 2020/6/18 10:40 文本文档 85 KB
NOTICE 2020/6/18 10:40 文本文档 15 KB
README 2020/6/18 10:40 文本文档 2 KB


编辑系统变量
变量名(N):
HADOOP_HOME
变量值(V):
D:\1.systerm\hadoop
浏览目录(D)...
浏览文件(F)...
确定
取消



3. 修改本机 hosts（本地运行 eclipse 必要操作）

文件资源

所有安装包和尚硅谷大数据文档
链接：https://pan.baidu.com/s/1G-Jt2mdYgApxN8kwGLYetQ
提取码：h3ni

参考文献：

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   原文链接：https://blog.csdn.net/sinat_34022298/article/details/72621887
2. Ubuntu16.04 Xshell 远程控制、Filezilla 远程传输文件
   原文链接：https://blog.csdn.net/weixin_43789195/article/details/106126816
3. Ubuntu16.04 安装 Hadoop 单机和伪分布式环境超详细
   原文链接：https://blog.csdn.net/kh896424665/article/details/78765175
4. Ubuntu16.04 下搭建 Hadoop2.7.4 单机伪分布式环境
   原文链接：https://www.jianshu.com/p/e4c709cf8daa/
5. Cenos7 下 hadoop2.7.7 伪分布式模式安装
   原文链接：https://www.cnblogs.com/chenruhai/p/12464201.html
6. 尚硅谷视频
7. 各类文档