

HBase集群安装

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正文

前提

- 1、HBase 依赖于 HDFS 做底层的数据存储
- 2、HBase 依赖于 MapReduce 做数据计算
- 3、HBase 依赖于 ZooKeeper 做服务协调
- 4、HBase源码是java编写的，安装需要依赖JDK

版本选择

hadoop版本用的是2.7.5，HBase选择的版本是1.2.6

安装

1、zookeeper的安装

参考<http://www.cnblogs.com/qingyunzong/p/8619184.html>

2、Hadoopd的安装

参考<http://www.cnblogs.com/qingyunzong/p/8634335.html>

3、下载安装包

找到官网下载 hbase 安装包 hbase-1.2.6-bin.tar.gz，这里给大家提供一个下载地址：<http://mirrors.hust.edu.cn/apache/hbase/>

nginx

/apache/hbase/stable/		
File Name	File Size	Date
../	-	-
1.2.5_1.2.6RC0_compat_report.html	25005	20-Jun-2017 10:41
hbase-1.2.6-bin.tar.gz	104659474	20-Jun-2017 10:42
hbase-1.2.6-src.tar.gz	16054584	20-Jun-2017 10:41

4、上传服务器并解压缩到指定目录

```
[hadoop@hadoop1 ~]$ ls
apps data hbase-1.2.6-bin.tar.gz hello.txt log zookeeper.out
[hadoop@hadoop1 ~]$ tar -zxvf hbase-1.2.6-bin.tar.gz -C apps/
```

5、修改配置文件

配置文件目录在安装包的conf文件夹中

(1) 修改hbase-env.sh

```
[hadoop@hadoop1 conf]$ vi hbase-env.sh
export JAVA_HOME=/usr/local/jdk1.8.0_73
export HBASE_MANAGES_ZK=false
```

```
1 hadoop1-hadoop x 2 hadoop2-hadoop x 3 hadoop3-hadoop x 4 hadoop4-hadoop x +
# so try to keep things idempotent unless you want to take an even deeper look
# into the startup scripts (bin/hbase, etc.)

# The java implementation to use. Java 1.7+ required.
export JAVA_HOME=/usr/local/jdk1.8.0_73

# Extra Java CLASSPATH elements. Optional.
# export HBASE_CLASSPATH=
```

```
1 hadoop1-hadoop x 2 hadoop2-hadoop x 3 hadoop3-hadoop x 4 hadoop4-hadoop x +
# The directory where pid files are stored. /tmp by default.
# export HBASE_PID_DIR=/var/hadoop/pids

# 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 HBASE_SLAVE_SLEEP=0.1

# Tell HBase whether it should manage it's own instance of Zookeeper or not.
export HBASE_MANAGES_ZK=false

# The default log rolling policy is RFA, where the log file is rolled as per the size defined for the
# RFA appender. Please refer to the log4j.properties file to see more details on this appender.
# In case one needs to do log rolling on a date change, one should set the environment property
# HBASE_ROOT_LOGGER to "<DESIRED_LOG_LEVEL>,DRFA".
```

(2) 修改hbase-site.xml

```
[hadoop@hadoop1 conf]$ vi hbase-site.xml
```

```
<configuration>
  <property>
    <!-- 指定 hbase 在 HDFS 上存储的路径 -->
    <name>hbase.rootdir</name>
    <value>hdfs://myha01/hbase126</value>
  </property>
  <property>
    <!-- 指定 hbase 是分布式的 -->
    <name>hbase.cluster.distributed</name>
    <value>true</value>
  </property>
  <property>
    <!-- 指定 zk 的地址，多个用 “,” 分割 -->
    <name>hbase.zookeeper.quorum</name>
    <value>hadoop1:2181,hadoop2:2181,hadoop3:2181,hadoop4:2181</value>
  </property>
</configuration>
```

(3) 修改regionservers

```
[hadoop@hadoop1 conf]$ vi regionservers
hadoop1
hadoop2
hadoop3
hadoop4
```

```
1 hadoop1-hadoop x 2 hadoop2-hadoop x 3 hadoop3-hadoop x
hadoop1
hadoop2
hadoop3
hadoop4
```

(4) 修改backup-masters

该文件是不存在的，先自行创建

```
[hadoop@hadoop1 conf]$ vi backup-masters hadoop4
```

(5) 修改hdfs-site.xml 和 core-site.xml

最重要一步，要把 hadoop 的 hdfs-site.xml 和 core-site.xml 放到 hbase-1.2.6/conf 下

```
[hadoop@hadoop1 conf]$ cd ~/apps/hadoop-2.7.5/etc/hadoop/
[hadoop@hadoop1 hadoop]$ cp core-site.xml hdfs-site.xml ~/apps/hbase-1.2.6/conf/
```

6、将HBase安装包分发到其他节点

分发之前先删除HBase目录下的docs文件夹，

```
[hadoop@hadoop1 hbase-1.2.6]$ rm -rf docs/
```

在进行分发

```
[hadoop@hadoop1 apps]$ scp -r hbase-1.2.6/ hadoop2:$PWD
[hadoop@hadoop1 apps]$ scp -r hbase-1.2.6/ hadoop3:$PWD
[hadoop@hadoop1 apps]$ scp -r hbase-1.2.6/ hadoop4:$PWD
```

7、同步时间

HBase 集群对于时间的同步要求的比 HDFS 严格，所以，集群启动之前千万记住要进行 时间同步，要求相差不要超过 30s

8、配置环境变量

所有服务器都有进行配置

```
[hadoop@hadoop1 apps]$ vi ~/.bashrc
#HBase
export HBASE_HOME=/home/hadoop/apps/hbase-1.2.6
export PATH=$PATH:$HBASE_HOME/bin
```

使环境变量立即生效

```
[hadoop@hadoop1 apps]$ source ~/.bashrc
```

启动HBase集群

严格按照启动顺序进行

1、启动zookeeper集群

每个zookeeper节点都要执行以下命令

```
[hadoop@hadoop1 apps]$ zkServer.sh start
ZooKeeper JMX enabled by default
Using config: /home/hadoop/apps/zookeeper-3.4.10/bin/../conf/zoo.cfg
Starting zookeeper ... STARTED
[hadoop@hadoop1 apps]$
```

2、启动HDFS集群及YARN集群

如果需要运行MapReduce程序则启动yarn集群，否则不需要启动

```
[hadoop@hadoop1 apps]$ start-dfs.sh
Starting namenodes on [hadoop1 hadoop2]
hadoop2: starting namenode, logging to /home/hadoop/apps/hadoop-2.7.5/logs/hadoop-hadoop-namenode-hadoop2.out
hadoop1: starting namenode, logging to /home/hadoop/apps/hadoop-2.7.5/logs/hadoop-hadoop-namenode-hadoop1.out
hadoop3: starting datanode, logging to /home/hadoop/apps/hadoop-2.7.5/logs/hadoop-hadoop-datanode-hadoop3.out
hadoop4: starting datanode, logging to /home/hadoop/apps/hadoop-2.7.5/logs/hadoop-hadoop-datanode-hadoop4.out
hadoop2: starting datanode, logging to /home/hadoop/apps/hadoop-2.7.5/logs/hadoop-hadoop-datanode-hadoop2.out
hadoop1: starting datanode, logging to /home/hadoop/apps/hadoop-2.7.5/logs/hadoop-hadoop-datanode-hadoop1.out
Starting journal nodes [hadoop1 hadoop2 hadoop3]
hadoop3: starting journalnode, logging to /home/hadoop/apps/hadoop-2.7.5/logs/hadoop-hadoop-journalnode-hadoop3.out
hadoop2: starting journalnode, logging to /home/hadoop/apps/hadoop-2.7.5/logs/hadoop-hadoop-journalnode-hadoop2.out
hadoop1: starting journalnode, logging to /home/hadoop/apps/hadoop-2.7.5/logs/hadoop-hadoop-journalnode-hadoop1.out
Starting ZK Failover Controllers on NN hosts [hadoop1 hadoop2]
hadoop2: starting zkfc, logging to /home/hadoop/apps/hadoop-2.7.5/logs/hadoop-hadoop-zkfc-hadoop2.out
hadoop1: starting zkfc, logging to /home/hadoop/apps/hadoop-2.7.5/logs/hadoop-hadoop-zkfc-hadoop1.out
[hadoop@hadoop1 apps]$
```

启动完成之后检查以下namenode的状态

```
[hadoop@hadoop1 apps]$ hdfs haadmin -getServiceState nn1
standby
[hadoop@hadoop1 apps]$ hdfs haadmin -getServiceState nn2
active
[hadoop@hadoop1 apps]$
```

3、启动HBase

保证 ZooKeeper 集群和 HDFS 集群启动正常的情况下启动 HBase 集群 启动命令：start-hbase.sh，在哪台节点上执行此命令，哪个节点就是主节点

```
[hadoop@hadoop1 conf]$ start-hbase.sh
starting master, logging to /home/hadoop/apps/hbase-1.2.6/logs/hbase-hadoop-master-hadoop1.out
Java HotSpot(TM) 64-Bit Server VM warning: ignoring option PermSize=128m; support was removed in 8.0
Java HotSpot(TM) 64-Bit Server VM warning: ignoring option MaxPermSize=128m; support was removed in 8.0
hadoop3: starting regionserver, logging to /home/hadoop/apps/hbase-1.2.6/logs/hbase-hadoop-regionserver-hadoop3.out
hadoop4: starting regionserver, logging to /home/hadoop/apps/hbase-1.2.6/logs/hbase-hadoop-regionserver-hadoop4.out
hadoop2: starting regionserver, logging to /home/hadoop/apps/hbase-1.2.6/logs/hbase-hadoop-regionserver-hadoop2.out
hadoop3: Java HotSpot(TM) 64-Bit Server VM warning: ignoring option PermSize=128m; support was removed in 8.0
hadoop3: Java HotSpot(TM) 64-Bit Server VM warning: ignoring option MaxPermSize=128m; support was removed in 8.0
hadoop4: Java HotSpot(TM) 64-Bit Server VM warning: ignoring option PermSize=128m; support was removed in 8.0
hadoop4: Java HotSpot(TM) 64-Bit Server VM warning: ignoring option MaxPermSize=128m; support was removed in 8.0
hadoop2: Java HotSpot(TM) 64-Bit Server VM warning: ignoring option PermSize=128m; support was removed in 8.0
hadoop2: Java HotSpot(TM) 64-Bit Server VM warning: ignoring option MaxPermSize=128m; support was removed in 8.0
hadoop1: starting regionserver, logging to /home/hadoop/apps/hbase-1.2.6/logs/hbase-hadoop-regionserver-hadoop1.out
hadoop4: starting master, logging to /home/hadoop/apps/hbase-1.2.6/logs/hbase-hadoop-master-hadoop4.out
[hadoop@hadoop1 conf]$
```

观看启动日志可以看到：

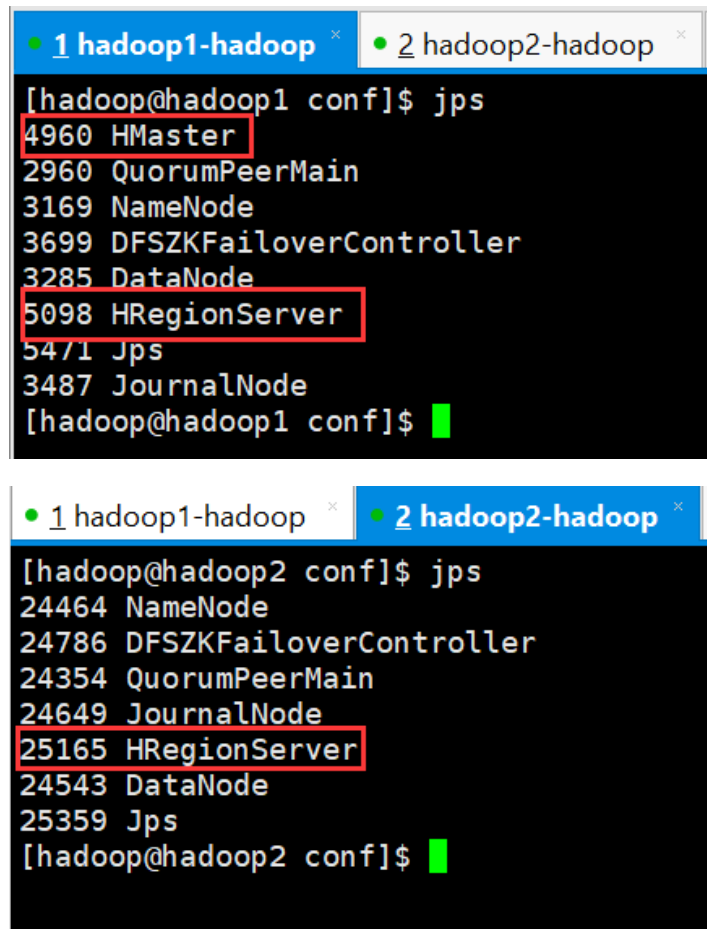
- (1) 首先在命令执行节点启动 master
- (2) 然后分别在 hadoop02,hadoop03,hadoop04,hadoop05 启动 regionserver
- (3) 然后在 backup-masters 文件中配置的备节点上再启动一个 master 主进程

验证启动是否正常

1、检查各进程是否启动正常

主节点和备用节点都启动 hmaster 进程

各从节点都启动 hregionserver 进程



```
1 hadoop1-hadoop x 2 hadoop2-hadoop x
[hadoop@hadoop1 conf]$ jps
4960 HMaster
2960 QuorumPeerMain
3169 NameNode
3699 DFSZKFailoverController
3285 DataNode
5098 HRegionServer
5471 Jps
3487 JournalNode
[hadoop@hadoop1 conf]$

1 hadoop1-hadoop x 2 hadoop2-hadoop x
[hadoop@hadoop2 conf]$ jps
24464 NameNode
24786 DFSZKFailoverController
24354 QuorumPeerMain
24649 JournalNode
25165 HRegionServer
24543 DataNode
25359 Jps
[hadoop@hadoop2 conf]$
```

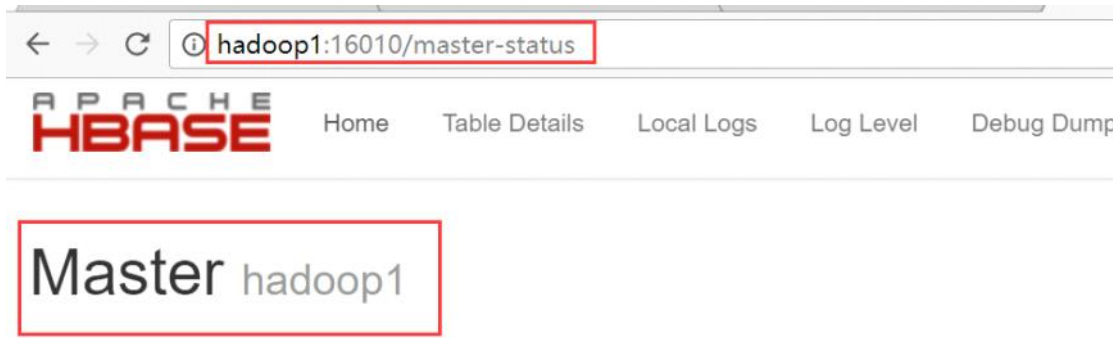
```
1 hadoop1-hadoop x 2 hadoop2-hadoop x 3 hadoop3-hadoop x
[hadoop@hadoop3 conf]$ jps
3360 Jps
2833 JournalNode
2633 QuorumPeerMain
3179 HRegionServer
2732 DataNode
[hadoop@hadoop3 conf]$
```

```
1 hadoop1-hadoop x 2 hadoop2-hadoop x 3 hadoop3-hadoop x 4 hadoop4-hadoop x
[hadoop@hadoop4 conf]$ jps
3523 Jps
3256 HMaster
2668 QuorumPeerMain
3149 HRegionServer
2767 DataNode
[hadoop@hadoop4 conf]$
```

按照对应的配置信息各个节点应该要启动的进程如上图所示

2、通过访问浏览器页面

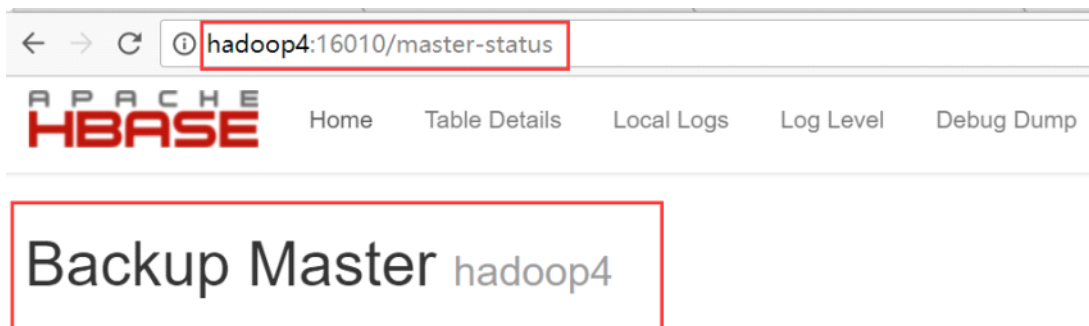
hadoop1



Region Servers

Base Stats Memory Requests Storefiles Compactions

hadoop4



Current Active Master: [hadoop1](#)

Tasks

Show All Monitored Tasks

Show non-RPC Tasks

Show All RPC Handler Tasks

Show

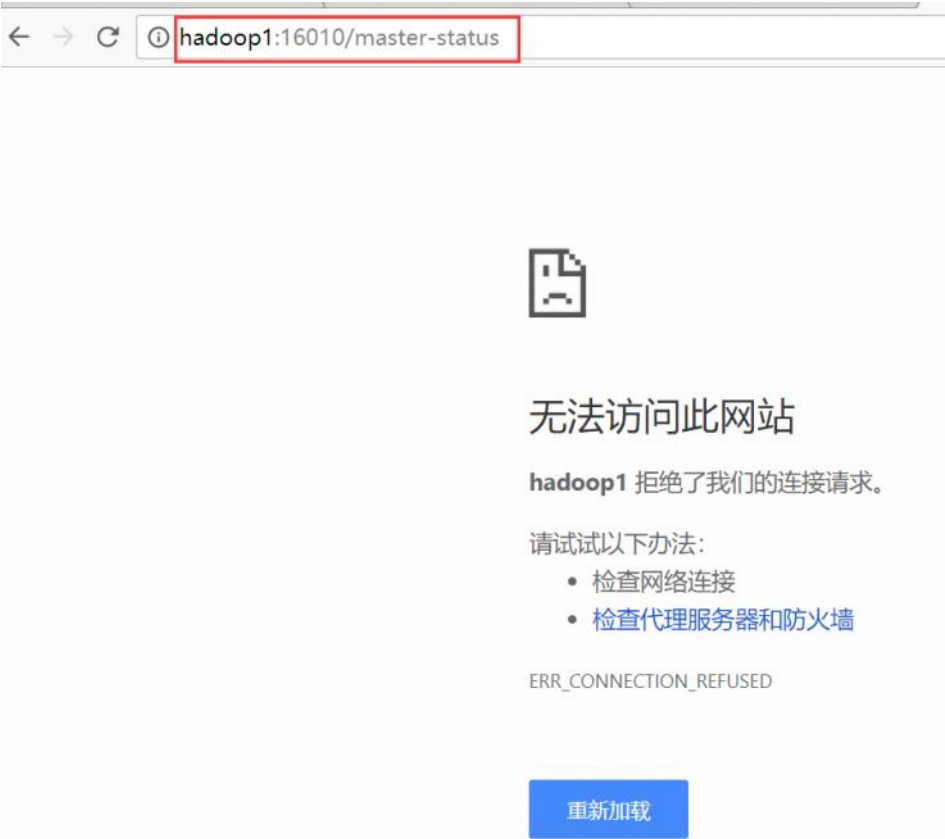
从图中可以看出hadoop4是备用节点

3、验证高可用

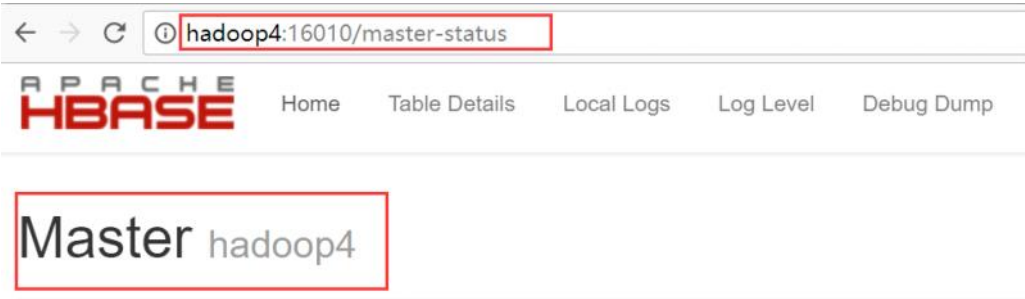
干掉hadoop1上的hbase进程，观察备用节点是否启用

```
[hadoop@hadoop1 conf]$ jps
4960 HMaster
2960 QuorumPeerMain
3169 NameNode
3699 DFSZKFailoverController
3285 DataNode
5098 HRegionServer
5471 Jps
3487 JournalNode
[hadoop@hadoop1 conf]$ kill -9 4960
```

hadoop1界面访问不了



hadoop4变成主节点



Region Servers

- Base Stats
- Memory
- Requests
- Storefiles
- Compactions

4、如果有节点相应的进程没有启动，那么可以手动启动

启动HMaster进程

```
[hadoop@hadoop3 conf]$ jps
3360 Jps
2833 JournalNode
2633 QuorumPeerMain
3179 HRegionServer
2732 DataNode
[hadoop@hadoop3 conf]$ hbase-daemon.sh start master
starting master, logging to /home/hadoop/apps/hbase-1.2.6/logs/hbase-hadoop-master-hadoop3.out
Java HotSpot(TM) 64-Bit Server VM warning: ignoring option PermSize=128m; support was removed in 8.0
Java HotSpot(TM) 64-Bit Server VM warning: ignoring option MaxPermSize=128m; support was removed in 8.0
[hadoop@hadoop3 conf]$ jps
2833 JournalNode
3510 Jps
3432 HMaster
2633 QuorumPeerMain
3179 HRegionServer
2732 DataNode
[hadoop@hadoop3 conf]$
```

启动HRegionServer进程

```
[hadoop@hadoop3 conf]$ hbase-daemon.sh start regionserver
```