Hbase 安裝步驟

1. 下載 Hbase 套件:
   sudo wget http://ftp.twaren.net/Unix/Web/apache/hbase/2.2.3/hbase-2.2.3-bin.tar.gz
2. 解壓縮 Hbase 套件
   sudo tar -zxvf hbase-2.2.3-bin.tar.gz
3. 將 hbase-2.2.3 重新命名為 hbase 並將它搬到/opt
   sudo mv hbase-2.2.3 /opt/hbase
4. 變更權限，bao 為帳號
   sudo chown -R bao: bao /opt/hbase
5. 修改/etc/profile
   sudo gedit /etc/profile
   #新增下列一行
   export HBASE_HOME="/opt/hbase"
   #接著修改 export PATH，在最後增加:$HBASE_HOME /bin
   export PATH
   =$PATH:$JAVA_HOME/bin:$HADOOP_HOME/bin:$HADOOP_HOME/sbin:$MAVEN_
   HOME/bin:$MAHOUT_HOME/bin:$HBASE_HOME/bin
6. 執行環境變數
   source /etc/profile
7. 查看正確安裝
   hbase version
8. 修改 hbase-env.sh

sudo gedit /opt/hbase/conf/hbase-env.sh

將下列幾行加到最下面

export JAVA_HOME="/opt/jdk"

export HBASE_CLASSPATH="/opt/hadoop/etc/hadoop"

export HBASE_MANAGES_ZK=true

9.修改 hbase-site.xml

sudo gedit /opt/hbase/conf/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>
        <property>
            <name>hbase.zookeeper.quorum</name>
            <value>master</value>
        </property>
        <property>
            <name>hbase.unsafe.stream.capability.enforce</name>
            <value>false</value>
        </property>
</configuration>
```

10.啟動 Hbase(如果有先啟動 hadoop，請將先 hadoop 關閉，此假設已經啟動 hadoop)

source /opt/hadoop/etc/hadoop/hadoop-env.sh

stop-all.sh

然後再啟動 hadoop

start-all.sh

啟動 Hbase

start-hbase.sh

11.用 jps 確認有無安裝成功

jps

```
bao@master:~$ jps
44752 Jps
25632 HRegionServer
24113 DataNode
25474 HMaster
24564 ResourceManager
24791 NodeManager
24327 SecondaryNameNode
25404 HQuorumPeer
23935 NameNode
```

HBase 範例

1.開啟 Hbase

hbase shell

```
bao@master:~$ hbase shell
SLF4J: Class path contains multiple SLF4J bindings.
SLF4J: Found binding in [jar:file:/opt/hadoop/share/hadoop/common/lib/slf4j-log4
j12-1.7.25.jar!/org/slf4j/impl/StaticLoggerBinder.class]
SLF4J: Found binding in [jar:file:/opt/hbase/lib/client-facing-thirdparty/slf4j-
log4j12-1.7.25.jar!/org/slf4j/impl/StaticLoggerBinder.class]
SLF4J: See http://www.slf4j.org/codes.html#multiple_bindings for an explanation.
SLF4J: Actual binding is of type [org.slf4j.impl.Log4jLoggerFactory]
HBase Shell
Use "help" to get list of supported commands.
Use "exit" to quit this interactive shell.
For Reference, please visit: http://hbase.apache.org/2.0/book.html#shell
Version 2.2.3, r6a830d87542b766bd3dc4cfdee28655f62de3974, 2020年 01月 10日 星期
五 18:27:51 CST
Took 0.0023 seconds
hbase(main):001:0>
```

2. 新增 table

create 't1','f1','f2','fn'

```
hbase(main):001:0> create 't1','f1','f2','fn'
Created table t1
Took 3.0041 seconds
=> Hbase::Table - t1
```

3. 查詢 Table 欄位

describe 't1'

```
hbase(main):002:0> describe 't1'
Table t1 is ENABLED
t1
COLUMN FAMILIES DESCRIPTION
{NAME => 'f1', VERSIONS => '1', EVICT_BLOCKS_ON_CLOSE => 'false', NEW_VERSION_BE
HAVIOR => 'false', KEEP_DELETED_CELLS => 'FALSE', CACHE_DATA_ON_WRITE => 'false'
, DATA_BLOCK_ENCODING => 'NONE', TTL => 'FOREVER', MIN_VERSIONS => '0', REPLICAT
ION_SCOPE => '0', BLOOMFILTER => 'ROW', CACHE_INDEX_ON_WRITE => 'false', IN_MEMO
RY => 'false', CACHE_BLOOMS_ON_WRITE => 'false', PREFETCH_BLOCKS_ON_OPEN => 'fal
se', COMPRESSION => 'NONE', BLOCKCACHE => 'true', BLOCKSIZE => '65536'}

{NAME => 'f2', VERSIONS => '1', EVICT_BLOCKS_ON_CLOSE => 'false', NEW_VERSION_BE
HAVIOR => 'false', KEEP_DELETED_CELLS => 'FALSE', CACHE_DATA_ON_WRITE => 'false'
, DATA_BLOCK_ENCODING => 'NONE', TTL => 'FOREVER', MIN_VERSIONS => '0', REPLICAT
ION_SCOPE => '0', BLOOMFILTER => 'ROW', CACHE_INDEX_ON_WRITE => 'false', IN_MEMO
RY => 'false', CACHE_BLOOMS_ON_WRITE => 'false', PREFETCH_BLOCKS_ON_OPEN => 'fal
se', COMPRESSION => 'NONE', BLOCKCACHE => 'true', BLOCKSIZE => '65536'}

{NAME => 'fn', VERSIONS => '1', EVICT_BLOCKS_ON_CLOSE => 'false', NEW_VERSION_BE
HAVIOR => 'false', KEEP_DELETED_CELLS => 'FALSE', CACHE_DATA_ON_WRITE => 'false'
, DATA_BLOCK_ENCODING => 'NONE', TTL => 'FOREVER', MIN_VERSIONS => '0', REPLICAT
ION_SCOPE => '0', BLOOMFILTER => 'ROW', CACHE_INDEX_ON_WRITE => 'false', IN_MEMO
RY => 'false', CACHE_BLOOMS_ON_WRITE => 'false', PREFETCH_BLOCKS_ON_OPEN => 'fal
se', COMPRESSION => 'NONE', BLOCKCACHE => 'true', BLOCKSIZE => '65536'}

3 row(s)

QUOTAS
0 row(s)
Took 0.2323 seconds
```

4. 列出所有 table

list

```
hbase(main):003:0> list
TABLE

t1

1 row(s)
Took 0.0636 seconds

=> ["t1"]
```

5. 加入 cell-value(需先有表 t1 與 column-family : f1，且加入一個 column-quantifier c1)

```
hbase(main):004:0> put 't1', 'r1', 'f1', 'v1'
Took 0.2835 seconds
hbase(main):005:0> put 't1', 'r1', 'f1:c1', 'v2'
Took 0.0188 seconds
hbase(main):006:0> put 't1', 'r2', 'f2', 'v3'
Took 0.0117 seconds
hbase(main):007:0> put 't1', 'r2', 'f2:c2', 'v4'
Took 0.0084 seconds
```

Table: 't1'					
row-key	'f1'		'f2'		'fn'	column-family
	*	'c1'	*	'c2'	*	column-quantifier
r1	v1					
		v2				
r2			v3			
				v4		

6. 列出 cell-value

get 't1', 'r1'

```
hbase(main):008:0> get 't1', 'r1'
COLUMN                  CELL
 f1:                    timestamp=1582704267251, value=v1
 f1:c1                  timestamp=1582704277596, value=v2
1 row(s)
Took 0.0731 seconds
```

Table: 't1'					
row-key	'f1'		'f2'		'fn'	column-family
	*	'c1'	*	'c2'	*	column-quantifier
r1	v1					
		v2				
r2			v3			
				v4		

#列出一個 cell 的值

get 't1', 'r1', {COLUMN => 'f1:c1'}

```
hbase(main):009:0> get 't1', 'r1', {COLUMN => 'f1:c1'}
COLUMN                    CELL
 f1:c1                    timestamp=1582704277596, value=v2
1 row(s)
Took 0.0185 seconds
```

7. 刪除 cell-value

deleteall 't1','r1'

```
hbase(main):010:0> deleteall 't1','r1'
Took 0.0534 seconds
```

Table: 't1'						
row-key	'f1'		'f2'		'fn'	column-family
	*	'c1'	*	'c2'	*	column-quantifier
■	■	■	■	■	■	
r2			v3			
				v4		

8. 加入 column family

#要修改 table 結構，必須先 disable，修改完後再 enable

disable 't1'

alter 't1', {NAME => 'f3'}

enable 't1'

```
hbase(main):011:0> disable 't1'
Took 2.6401 seconds
hbase(main):012:0> alter 't1', {NAME => 'f3'}
Updating all regions with the new schema...
All regions updated.
Done.
Took 1.7740 seconds
hbase(main):013:0> enable 't1'
Took 1.3383 seconds
```

```
hbase(main):014:0> describe 't1'
Table t1 is ENABLED
t1
COLUMN FAMILIES DESCRIPTION
{NAME => 'f1', VERSIONS => '1', EVICT_BLOCKS_ON_CLOSE => 'false', NEW_VERSION_BE
HAVIOR => 'false', KEEP_DELETED_CELLS => 'FALSE', CACHE_DATA_ON_WRITE => 'false'
, DATA_BLOCK_ENCODING => 'NONE', TTL => 'FOREVER', MIN_VERSIONS => '0', REPLICAT
ION_SCOPE => '0', BLOOMFILTER => 'ROW', CACHE_INDEX_ON_WRITE => 'false', IN_MEMO
RY => 'false', CACHE_BLOOMS_ON_WRITE => 'false', PREFETCH_BLOCKS_ON_OPEN => 'fal
se', COMPRESSION => 'NONE', BLOCKCACHE => 'true', BLOCKSIZE => '65536'}

{NAME => 'f2', VERSIONS => '1', EVICT_BLOCKS_ON_CLOSE => 'false', NEW_VERSION_BE
HAVIOR => 'false', KEEP_DELETED_CELLS => 'FALSE', CACHE_DATA_ON_WRITE => 'false'
, DATA_BLOCK_ENCODING => 'NONE', TTL => 'FOREVER', MIN_VERSIONS => '0', REPLICAT
ION_SCOPE => '0', BLOOMFILTER => 'ROW', CACHE_INDEX_ON_WRITE => 'false', IN_MEMO
RY => 'false', CACHE_BLOOMS_ON_WRITE => 'false', PREFETCH_BLOCKS_ON_OPEN => 'fal
se', COMPRESSION => 'NONE', BLOCKCACHE => 'true', BLOCKSIZE => '65536'}

{NAME => 'f3', VERSIONS => '1', EVICT_BLOCKS_ON_CLOSE => 'false', NEW_VERSION_BE
HAVIOR => 'false', KEEP_DELETED_CELLS => 'FALSE', CACHE_DATA_ON_WRITE => 'false'
, DATA_BLOCK_ENCODING => 'NONE', TTL => 'FOREVER', MIN_VERSIONS => '0', REPLICAT
ION_SCOPE => '0', BLOOMFILTER => 'ROW', CACHE_INDEX_ON_WRITE => 'false', IN_MEMO
RY => 'false', CACHE_BLOOMS_ON_WRITE => 'false', PREFETCH_BLOCKS_ON_OPEN => 'fal
se', COMPRESSION => 'NONE', BLOCKCACHE => 'true', BLOCKSIZE => '65536'}

{NAME => 'fn', VERSIONS => '1', EVICT_BLOCKS_ON_CLOSE => 'false', NEW_VERSION_BE
HAVIOR => 'false', KEEP_DELETED_CELLS => 'FALSE', CACHE_DATA_ON_WRITE => 'false'
, DATA_BLOCK_ENCODING => 'NONE', TTL => 'FOREVER', MIN_VERSIONS => '0', REPLICAT
ION_SCOPE => '0', BLOOMFILTER => 'ROW', CACHE_INDEX_ON_WRITE => 'false', IN_MEMO
RY => 'false', CACHE_BLOOMS_ON_WRITE => 'false', PREFETCH_BLOCKS_ON_OPEN => 'fal
se', COMPRESSION => 'NONE', BLOCKCACHE => 'true', BLOCKSIZE => '65536'}

4 row(s)

QUOTAS
0 row(s)
Took 0.2565 seconds
```

Table: 't1'						
row-key	'f1'		'f2'		'f3'	'fn'	column-family
	*	'c1'	*	'c2'	*	*	column-quantifier
r2			v3				
				v4			

9. 删除 column family

disable 't1'

alter 't1', {NAME => 'f1', METHOD => 'delete'}

enable 't1'

```
hbase(main):015:0> disable 't1'
Took 0.9113 seconds
hbase(main):016:0> alter 't1', {NAME => 'f1', METHOD => 'delete'}
Updating all regions with the new schema...
All regions updated.
Done.
Took 1.8718 seconds
hbase(main):017:0> enable 't1'
Took 1.2583 seconds
```

```
hbase(main):018:0> describe 't1'
Table t1 is ENABLED
t1
COLUMN FAMILIES DESCRIPTION
{NAME => 'f2', VERSIONS => '1', EVICT_BLOCKS_ON_CLOSE => 'false', NEW_VERSION_BE
HAVIOR => 'false', KEEP_DELETED_CELLS => 'FALSE', CACHE_DATA_ON_WRITE => 'false'
, DATA_BLOCK_ENCODING => 'NONE', TTL => 'FOREVER', MIN_VERSIONS => '0', REPLICAT
ION_SCOPE => '0', BLOOMFILTER => 'ROW', CACHE_INDEX_ON_WRITE => 'false', IN_MEMO
RY => 'false', CACHE_BLOOMS_ON_WRITE => 'false', PREFETCH_BLOCKS_ON_OPEN => 'fal
se', COMPRESSION => 'NONE', BLOCKCACHE => 'true', BLOCKSIZE => '65536'}

{NAME => 'f3', VERSIONS => '1', EVICT_BLOCKS_ON_CLOSE => 'false', NEW_VERSION_BE
HAVIOR => 'false', KEEP_DELETED_CELLS => 'FALSE', CACHE_DATA_ON_WRITE => 'false'
, DATA_BLOCK_ENCODING => 'NONE', TTL => 'FOREVER', MIN_VERSIONS => '0', REPLICAT
ION_SCOPE => '0', BLOOMFILTER => 'ROW', CACHE_INDEX_ON_WRITE => 'false', IN_MEMO
RY => 'false', CACHE_BLOOMS_ON_WRITE => 'false', PREFETCH_BLOCKS_ON_OPEN => 'fal
se', COMPRESSION => 'NONE', BLOCKCACHE => 'true', BLOCKSIZE => '65536'}

{NAME => 'fn', VERSIONS => '1', EVICT_BLOCKS_ON_CLOSE => 'false', NEW_VERSION_BE
HAVIOR => 'false', KEEP_DELETED_CELLS => 'FALSE', CACHE_DATA_ON_WRITE => 'false'
, DATA_BLOCK_ENCODING => 'NONE', TTL => 'FOREVER', MIN_VERSIONS => '0', REPLICAT
ION_SCOPE => '0', BLOOMFILTER => 'ROW', CACHE_INDEX_ON_WRITE => 'false', IN_MEMO
RY => 'false', CACHE_BLOOMS_ON_WRITE => 'false', PREFETCH_BLOCKS_ON_OPEN => 'fal
se', COMPRESSION => 'NONE', BLOCKCACHE => 'true', BLOCKSIZE => '65536'}

3 row(s)

QUOTAS
0 row(s)
Took 0.2217 seconds
```

Table: 't1'					
row-key		'f2'		'f3'	'fn'	column-family
		*	'c2'	*	*	column-quantifier
r2		v3				
			v4			

10. 刪除整張 table

#只清除表格內容(表 t1 會保留)

truncate 't1'

```
hbase(main):019:0> truncate 't1'
Truncating 't1' table (it may take a while):
Disabling table...
Truncating table...
Took 3.2671 seconds
```

#若要完整移除 't1' 資料表，須使用 disable 先將 't1' 停用，再用 drop 把 't1' 完全刪除

disable 't1'

drop 't1'

```
hbase(main):002:0> disable 't1'
Took 0.8555 seconds
hbase(main):003:0> drop 't1'
Took 0.3643 seconds
```