

## Upgrade to 0.96.x from 0.94.x:

0.96 is called "The Singularity" release, and there is no coming back. To ensure a smooth upgrade, this section briefs the steps involved in upgrading to 0.96 from the previous releases.

**Prerequisite:** HDFS and Zookeeper should be up and running all the time.

**Upgrade script:** 0.96 comes with an upgrade script (run ``bin/hbase --upgrade`` to see its help section). It runs in two modes: `-check`, and `-execute`.

**i) -check:** checks for HFileV1 files and should be run on a *running* 0.94 cluster.

HFileV1 is no longer supported in 0.96, and should be re-written to HFileV2 format before upgrading to 0.96. This could be done by major compacting the region which have such files. The `-check` mode prints stats at the end of the run (grep for "Result:" in the log). It prints absolute path of the tables it scanned, HFileV1 files if any, regions containing such files (to major compact), and corrupted files. A corrupt file is most likely not readable, and has a undefined major version (neither 1 nor 2).

To run the check mode, run `"bin/hbase upgrade -check"`

Sample o/p\*:

{code}

Tables Processed:

```
hdfs://localhost:41020/myHBase/.META.  
hdfs://localhost:41020/myHBase/usertable  
hdfs://localhost:41020/myHBase/TestTable  
hdfs://localhost:41020/myHBase/t
```

Count of HFileV1: 2

HFileV1:

```
hdfs://localhost:41020/myHBase/usertable  
/fa02dac1f38d03577bd0f7e666f12812/family/249450144068442524  
hdfs://localhost:41020/myHBase/usertable  
/ecdd3eaae2d2fcf8184ac025555bb2af/family/249450144068442512
```

Count of corrupted files: 1

Corrupted Files:

```
hdfs://localhost:41020/myHBase/usertable/fa02dac1f38d03577bd0f7e666f12812/family/1
```

Count of Regions with HFileV1: 2

Regions to Major Compact:

```
hdfs://localhost:41020/myHBase/usertable/fa02dac1f38d03577bd0f7e666f12812  
hdfs://localhost:41020/myHBase/usertable/ecdd3eaae2d2fcf8184ac025555bb2af
```

There are some HFileV1, or corrupt files (files with incorrect major version)  
{code}

In the above sample output, there are two HFileV1 in two regions, and one corrupt file.

By default, it scans the root directory (defined by hbase.rootdir). In case you are interested to scan a specific directory, use option -dir.

{code}  
bin/hbase upgrade --check --dir /myHBase/testTable  
{code}

The above command would detect HFileV1 in the /myHBase/testTable directory.

Major compact all the reported regions so as to transform the HFileV1 to HFileV2 format. Once all the HFileV1 files are rewritten, shutdown the cluster.

**ii) -execute:** It executes the actual upgrade process and should be run after *stopping* the cluster. It has a verification step which checks whether master, regionserver and backup-master znodes has expired or not. If not, it aborts the upgrade. This ensures no upgradation while a HBase process is still running. Retry after some time to let these znodes expire.

Note: As mentioned earlier, Zookeeper and HDFS should be available. If zookeeper is managed by HBase, then you can start zookeeper by:

```
./hbase/bin/hbase-daemon.sh start zookeeper
```

The upgrade involves three steps:

a) **Upgrade Namespace:** upgrades the directory layout of HBase files.

b) **Upgrade Znodes:** upgrades /hbase/replication (znodes corresponding to peers, log queues, etc) and table znodes (they keep table enable/disable information). It deletes other znodes.

c) **Log splitting:** In case the shutdown was not clean, there would be some WALs to split. This step does the log splitting of such WAL files. It is executed in a “non distributed mode”, which could make the upgrade process longer in case there are too many logs to split. To expedite the upgrade, ensure have a clean shutdown.

To run the execute mode, do “bin/hbase upgrade -execute”

Sample o/p\*:

{code}  
Starting Namespace upgrade  
Created version file at hdfs://localhost:41020/myHBase with version=7

Migrating table testTable to hdfs://localhost:41020/myHBase/.data/default/testTable

.....

Created version file at hdfs://localhost:41020/myHBase with version=8

Successfully completed NameSpace upgrade.

Starting Znode upgrade

....

Successfully completed Znode upgrade

Starting Log splitting

...

Successfully completed Log splitting

{code}