Cassendra, Hbase, MongoDb

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Hbase

- open-source, distributed, versioned, non-relational database modeled after Google's Bigtable
- random, realtime read/write access to Big Data
- provides Bigtable-like capabilities on top of Hadoop and HDFS

Hbase : Tables, Rows, Columns, and Cells

- the most basic unit is a column
- One or more columns form a row that is addressed uniquely by a row key
- number of rows, in turn, form a table
- Each column may have multiple versions, with each distinct value contained in a separate cell

Row Key	Timestamp	cf1	
rk1	t1	cf1:q1-1	v1
rk2	t2	cf1:q1-2	v2

Row Key	Timestamp	cf1	
rk3	t3	cf2:q2	v3

Row Key	Timestamp	cf1	
rk4	t4	cf3:q3	v4
	t5	cf3:q3	v5

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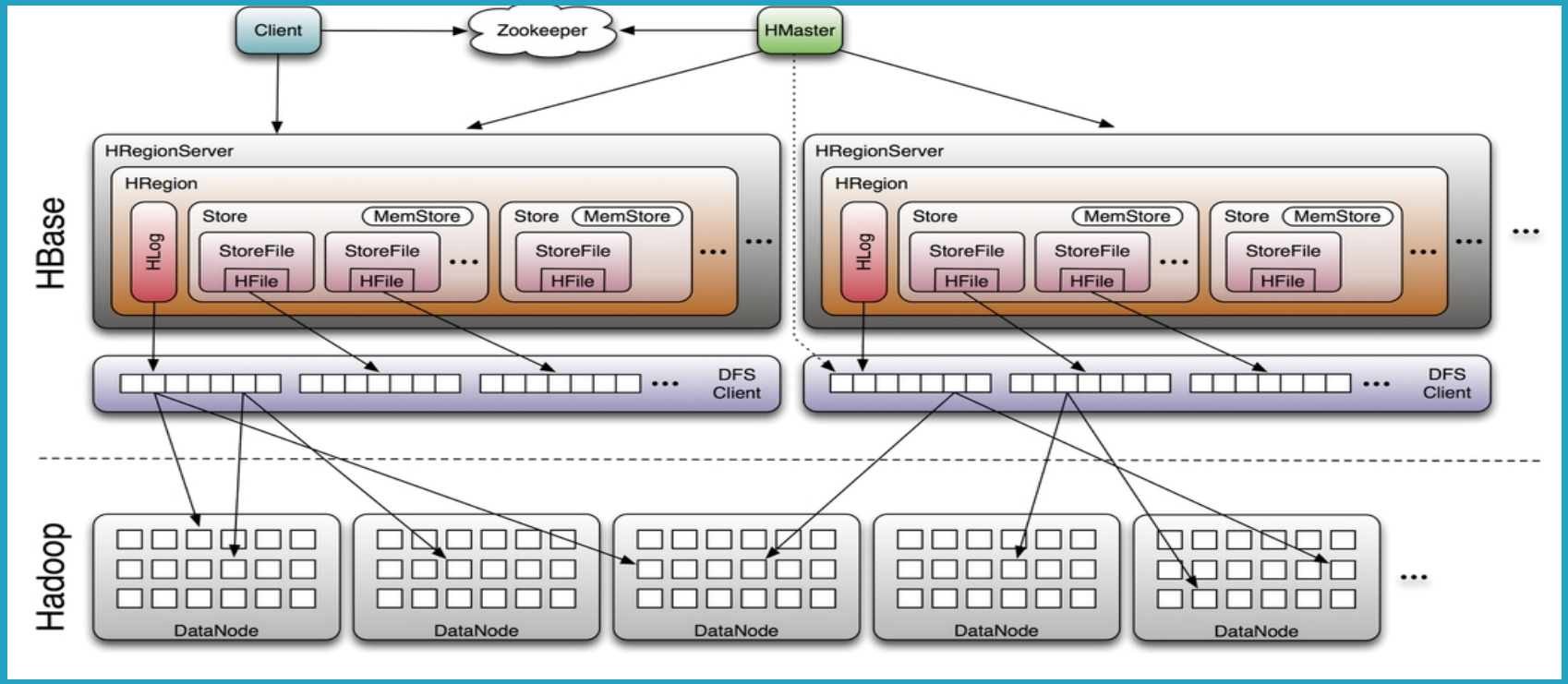
Hbase Components

Hbase Storage Architecture



Cassendra

MongoDb

HOMEWORK

Configuring Hbase

In $HBASE_HOME/conf

hbase-env.sh

export JAVA_HOME=/path/to/jdk

Configuring Hbase

hbase-site.xml

```
<configuration>
  <property>
    <name>hbase.rootdir</name>
    <value>hdfs://localhost:9000/hbase</value>
  </property>
  <property>
    <name>hbase.cluster.distributed</name>
    <value>true</value>
  </property>
```

Configuring Hbase

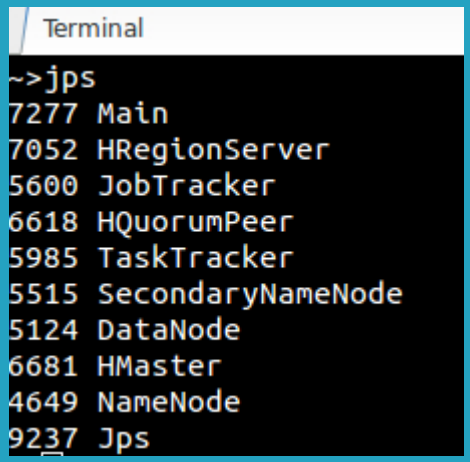
hbase-site.xml

```
<property>
  <name>hbase.zookeeper.quorum</name>
  <value>localhost</value>
  </property>
 <property>
   <name>hbase.zookeeper.property.dataDir</name>
   <value>/opt/hbasefolders/zookeeper</value>
 </property>
</configuration>
```

Starting Hbase

cd $HBASE_HOME/bin/

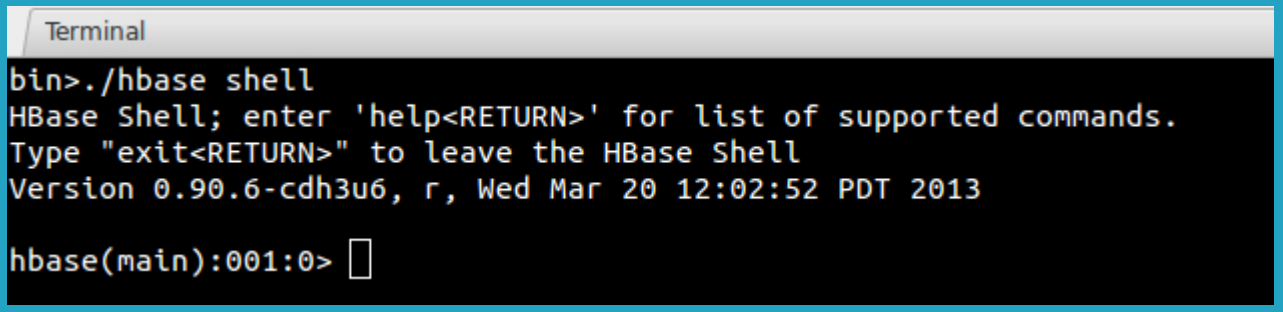
./start-hbase.sh



Hbase Shell

cd $HBASE_HOME/bin/

./hbase shell



Hbase Shell Commands

General Commands

- status - Provides the status of HBase, for example, the number of servers.
- version - Provides the version of HBase being used.
- table_help - Provides help for table-reference commands.
- whoami - Provides information about the user.

Hbase Shell Commands

Data Definition Language

- create - Creates a table.
- list - Lists all the tables in HBase.
- disable - Disables a table.
- is_disabled - Verifies whether a table is disabled.
- enable - Enables a table.
- is_enabled - Verifies whether a table is enabled.
- describe - Provides the description of a table.
- alter - Alters a table.
- exists - Verifies whether a table exists.
- drop - Drops a table from HBase.
- drop_all - Drops the tables matching the ‘regex’ given in the command.

Hbase Shell Commands

Data Manipulation Language

- put - Puts a cell value at a specified column in a specified row in a particular table.
- get - Fetches the contents of row or a cell.
- delete - Deletes a cell value in a table.
- deleteall - Deletes all the cells in a given row.
- scan - Scans and returns the table data.
- count - Counts and returns the number of rows in a table.
- truncate - Disables, drops, and recreates a specified table.

References

- Hbase The Definitive Guide
- http://www.larsgeorge.com/2009/10/hbase-architecture-101-storage.html
- http://www.edureka.co/blog/overview-of-hbase-storage-architecture/
- http://www.tutorialspoint.com/hbase/hbase_shell.htm