HDFS

Igor Yakushin
ivy2@uchicago.edu

HDFS

- Any file that is put into HDFS is automatically split into blocks (by default each block is 128M)
- Each block is replicated (by default 3 times)
- The blocks are spread across the cluster so that
  - calculations can be done in parallel on different blocks to increase performance
  - the file system is fault-taulerant with respect to disk/node/rack failure
  - if a node goes down, HDFS takes care of creating more replicas automatically
  - when a node comes back, extra replicas are destroyed
  - if a new node is added, data spreads on it automatically
  - there is a NameNode that keeps track of where the blocks are
- The calculations are done on DataNodes
- Hadoop tries to do computations where the data is to minimize communication between nodes which is much slower

HDFS: user interface

```
$ hdfs dfs -ls /user/$USER
drwx------   - ivy2 ivy2          0 2016-08-12 20:11 /user/ivy2/.Trash

$ hdfs dfs -mkdir /user/$USER/test2

$ hdfs dfs -put /usr/share/dict/linux.words /user/$USER/test2/

$ hdfs dfs -ls -h  /user/$USER/test2/
-rw-r--r--   3 ivy2 ivy2      4.7 M 2016-08-12 20:12 /user/ivy2/test2/linux.words

$ hdfs dfs -setrep 4  /user/$USER/test2/linux.words
Replication 4 set: /user/ivy2/test2/linux.words

$ hdfs dfs -ls -h  /user/$USER/test2/
-rw-r--r--   4 ivy2 ivy2      4.7 M 2016-08-12 20:12 /user/ivy2/test2/linux.words

$ hdfs dfs -mv /user/$USER/test2/linux.words /user/$USER/test2/words.txt

$ hdfs dfs -get /user/$USER/test2/words.txt

$ hdfs dfs -rm /user/$USER/test2/words.txt
```

Instead of hdfs dfs you can also use hadoop fs