

Big data: architectures and data analytics

HDFS and Hadoop

HDFS – command line

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HDFS

- The content of a HDFS file can be accessed by means of
 - Command line commands
 - A basic web interface provided by Apache Hadoop
 - The HDFS content can only be browsed and its files downloaded from HDFS to the local file system
 - Uploading functionalities are not available
 - Vendor-specific web interfaces providing a full set of functionalities (upload, download, rename, delete, ...)
 - E.g., the HUE web application of Cloudera

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HDFS – user folder

- Each user of the Hadoop cluster has a personal folder in the HDFS file system
 - The default folder of a user is
/user/username

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HDFS – command line

- The `hdfs` command can be executed in a Linux shell to read/write/modify/delete the content of the distributed file system
- The parameters/arguments of `hdfs` command are used to specify the operation to execute

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HDFS – command line

- List the content of a folder of the HDFS file system
`hdfs dfs -ls folder`
- Example
`hdfs dfs -ls /user/garza`
- shows the content (list of files and folders) of the `/user/garza` folder

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HDFS – command line

- Example


```
hdfs dfs -ls .
```
- shows the content of the home of the current user
 - i.e., the content of /user/*current_username*
 - `.` = user home
- The mapping between the local linux user and the user of the cluster is based on
 - A Kerberos ticket if Kerberos is active
 - Otherwise the local linux user is considered

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HDFS – command line

- Show the content of a file of the HDFS file system


```
hdfs dfs -cat file
```
- Example


```
hdfs dfs -cat /user/garza/document.txt
```
- Shows the content of the /user/garza/document.txt file stored in HDFS

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HDFS – command line

- Copy a file from the local file system to the HDFS file system


```
hdfs dfs -put local_file HDFS_path
```
- Example


```
hdfs dfs -put /data/document.txt /user/garza/
```
- Copy the local file /data/document.txt in the folder /user/garza of HDFS

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HDFS – command line

- Copy a file from the HDFS file system to the local file system


```
hdfs dfs -get HDFS_path local_file
```
- Example


```
hdfs dfs -get /user/garza/document.txt /data/
```
- Copy the HDFS file /user/garza/document.txt in the local file system folder /data/

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HDFS – command line

- Delete a file from the HDFS file system


```
hdfs dfs -rm HDFS_path
```
- Example


```
hdfs dfs -rm /user/garza/document.txt
```
- Delete from HDFS the file /user/garza/document.txt

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HDFS – command line

- There are many other linux-like commands
 - rmdir
 - du
 - tail
 - ...
- Useful link
 - <https://hadoop.apache.org/docs/r2.7.1/hadoop-project-dist/hadoop-hdfs/HDFSCommands.html>

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HDFS and Hadoop

Hadoop – command line

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Hadoop – command line

- The Hadoop programs are executed (submitted to the cluster) by using the hadoop command
 - It is a command line program
 - Hadoop is characterized by a set of parameters
 - E.g., the name of the jar file containing all the classes of the MapReduce application we want to execute
 - The name of the Driver class
 - The parameters/arguments of the MapReduce application

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Hadoop – command line example (1)

- The following command executes/submits a MapReduce application


```
hadoop jar MyApplication.jar
it.polito.bigdata.hadoop.DriverMyApplication 1
inputdatafolder/ outputdatafolder/
```
- It executes/submits the application contained in MyApplication.jar

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Hadoop – command line example (2)

- The Driver Class is
 - it.polito.bigdata.hadoop.DriverMyApplication
- The application has three arguments
 - Number of reducers (args[0])
 - Input data folder (args[1])
 - Output data folder (args[2])

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