

Data management on the Grid (2)



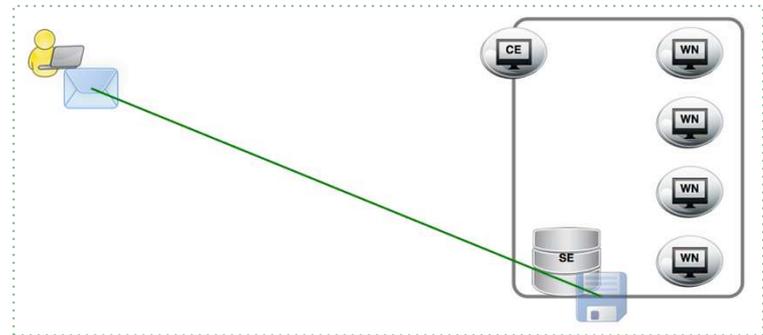
Outline

□ Data Management overview

- Sandbox
- Logical File Catalog (LFC)
- Srm
- Gridftp protocol

□ Grid storage tools:

- Mapping lfn and physical files
- Glite
- Lcg
- Lfc
- Srm



Preamble

- ❑ a valid Grid proxy
- ❑ the environment variable `LFC_HOST` set to you LFC server.
 - For all SARA's User Interface machines, this should be `lfc.grid.sara.nl`.
 - ✓ You could put the following in your `$HOME/.bash_profile`:`export LFC_HOST='lfc.grid.sara.nl'`

LFC

- ❑ **List all files stored for tutor VO**
 - `$ lfc-ls -l /grid/tutor`
- ❑ **export LFC_HOME='/grid/tutor'**
 - `$ lfc-ls -l`
- ❑ **Creating a new directory**
 - `$ lfc-mkdir /grid/tutor/mooc_test`
 - `$ lfc-ls -l /grid/tutor`
- ❑ **Storing a file on a Storage Element (SE)**
 - `$ lcg-cr --vo tutor -d srm://srm.grid.sara.nl:8443/pnfs/grid.sara.nl/data/tutor/mooc_test/localfile -l lfn:/grid/tutor/mooc_test/localfile "file://`pwd`/localfile"`
 - ✓ Returns a GUID:guid:e6410766-e56f-429b-9c25-f70dba499c8c
 - `$ lfc-ls -l /grid/tutor/mooc_test`

Virtual vs. physical file

- ❑ **Virtual directory:**
 - `$ lfc-mkdir /grid/tutor/mooc_test`
 - LFN

- ❑ **Physical file:**
 - Exists on a SE
 - Also has “virtual filename” in the catalog

File replication

❑ Single file stored on multiple Ses

- `$ lcg-lr lfn:/grid/tutor/mooc_test/localfile`

❑ Replicate to another SE

- `$ lcg-rep --vo tutor -d srm://gb-se-amc.amc.nl:8446/dpm/amc.nl/home/tutor/mooc_test/localfile lfn:/grid/tutor/mooc_test/localfile`

- See again which are the replicas

✓ `$ lcg-lr lfn:/grid/tutor/mooc_test/localfile`

`srm://gb-se-amc.amc.nl/dpm/amc.nl/home/tutor/mooc_test/localfile`

`srm://srm.grid.sara.nl/pnfs/grid.sara.nl/data/tutor/mooc_test/localfile`

Retrieving files from a Storage Element

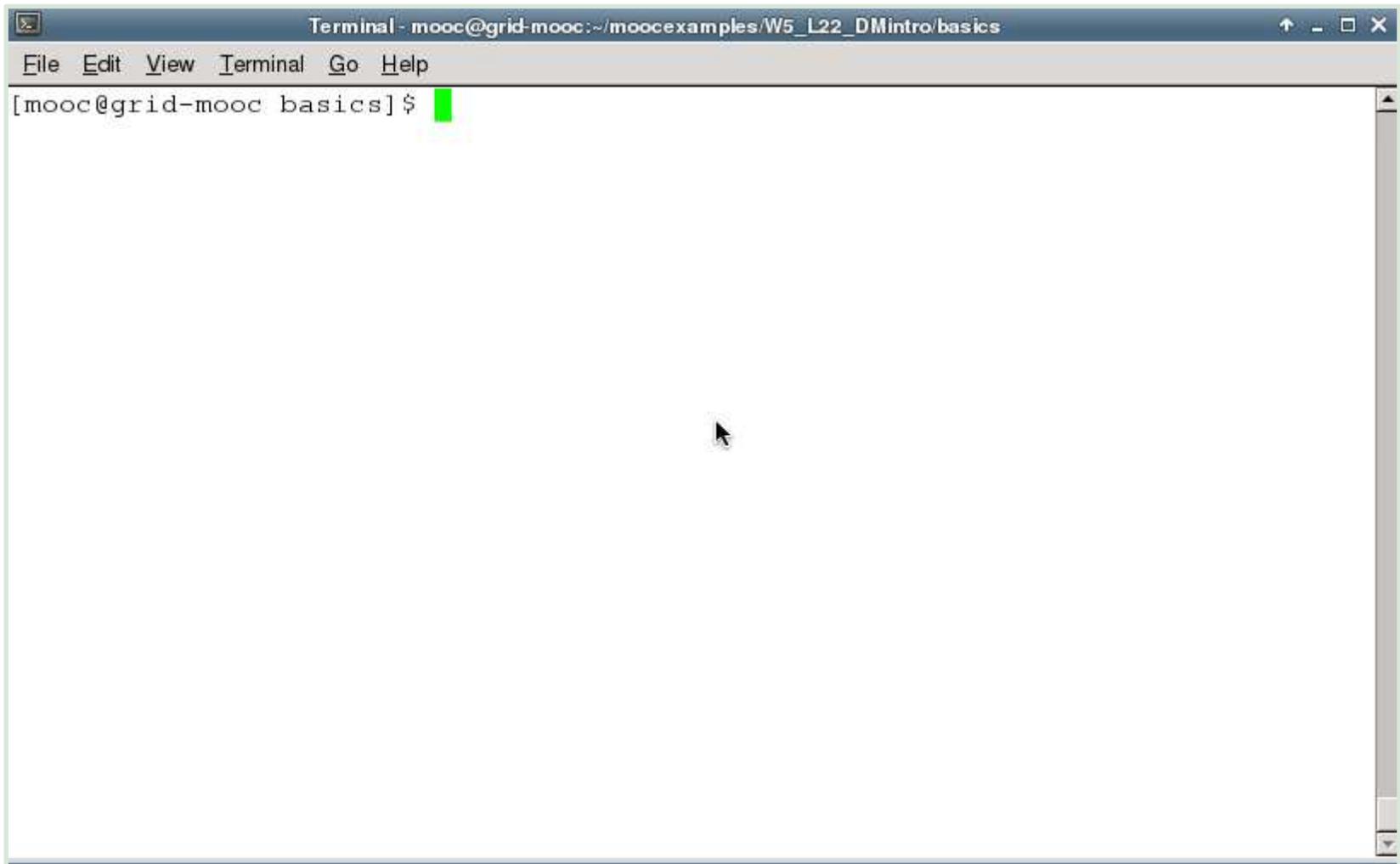
❑ Download a file:

- `$ lcg-cp --vo tutor lfn:/grid/tutor/mooc_test/localfile file://`pwd`/localfile`
 - ✓ `$ cat localfile`

❑ Deleting files from a Storage Element

- Directory must be empty!
- `$ lcg-del -a lfn:/grid/tutor/mooc_test/localfile`
 - ✓ Test with:
`$ lcg-lr lfn:/grid/tutor/mooc_test/localfile`
`[LFC][lfc_getreplica][] lfc.grid.sara.nl: /grid/tutor/mooc_test/localfile: No such file or directory`
`lcg_lr: No such file or directory`

Data management basics



A terminal window titled "Terminal - mooc@grid-mooc:~/moocexamples/W5_L22_DMintro/basics". The window has a menu bar with "File", "Edit", "View", "Terminal", "Go", and "Help". The main area shows a shell prompt "[mooc@grid-mooc basics]\$ " followed by a green cursor. A mouse cursor is visible in the center of the terminal area.

Summary

Command	Usage
<code>lfc-ls -l /grid/tutor</code>	List tutor VO files on Grid
<code>lfc-mkdir /grid/tutor/<dir_name></code>	Create a directory on Grid
<code>lcg-cr --vo tutor -d srm://srm.grid.sara.nl:8443/pnfs/ grid.sara.nl/data/tutor/<dir_name>/<filename> -l lfn:/grid/ tutor/<dir_name>/<filename> "file://`pwd`/<filename>"</code>	Upload a local file to a Grid SE and register this to the LFC
<code>lcg-rep --vo tutor -d srm://gb-se-ams.els.sara.nl:8446/ dpm/els.sara.nl/home/tutor/<dir_name>/<filename> lfn:/grid/tutor/ <dir_name>/<filename></code>	Replicate a file to another SE
<code>lcg-lr lfn:/grid/tutor/<dir_name>/<filename></code>	List the replicas of file
<code>lcg-cp --vo tutor lfn:/grid/tutor/<dir_name>/<filename> file:// `pwd`/<filename></code>	Download a Grid file to a local directory on your UI
<code>lcg-del -a lfn:/grid/tutor/<dir_name>/<filename></code>	Delete all the replicas of a file
<code>lfc-rm -r /grid/tutor/<dir_name></code>	Remove a non-empty directory