



**GRID'05
EGEE SUMMER SCHOOL
BUDAPEST**



Practice of GRID DATA HANDLING Part 1

Gabor Hermann

Preparation:

Enter to your terminal `ssh n40.hppcc.sztaki.hu` with your `<LOGIN_NAME>` and `<LOGIN_PASSWORD>`

Use everywhere the Virtual Organisation (`--vo`) `"hungrid"`

Examples are demonstrated for the user `"speci13"`

1. **Controlling the existence of your certificate** - `"usercert.pem"` and `"userkey.pem"` must exist:

```
ls -al ~/.globus
```

2. **Gaining access right to work in the grid by creating a short term proxy certificate** (`grid-proxy-init`)

(Your "Grid pass phrase" - associated to your secret key encoded in `"userkey.pem"` will be required)

```
grid-proxy-init
```

If you have created a proxy previously control its validity by `grid-proxy-info`.

If its lifetime is too short kill the old one with `grid-proxy-destroy`

3. **Controlling the settings of the LCG File catalog** (`lcg-infosites` `LFC_HOST` `LCG_CATALOG_TYPE`)

3.1 Control `LFC_HOST` i.e. the URL of the `lfc` file catalog for your virtual organisation

```
set | grep LFC_HOST
```

The result should be `grid155.kfki.hu` in our demo.

If it is not set, than seek the place of it with the information system:

```
set | grep LCG_GFAL_INFOSYS
```

```
lcg-infosites --vo hungrid lfc
```

If the command `lcg-infosites` does not work set the root of the info system:

Control how the root is set by

```
set | grep LCG_GFAL_INFOSYS
```

and make sure that it shows to: `grid152.kfki.hu:2170`

```
export LCG_GFAL_INFOSYS=grid152.kfki.hu:2170
```

and repeat the `lcg-infosites` command above.

Associate it to the environment variable `LFC_HOST`:

```
export LFC_HOST=grid155.kfki.hu
```

3.2 Control the type of the catalog

```
set | grep LCG_CATALOG_TYPE
```

if its value is not "lfc" than set it:

```
export LCG_CATALOG_TYPE=lfc
```

Comment: See that these settings must be repeated at the working Node, when the user wants to access GRID files there.

4. Controlling the base of LFC access point and defining a new personal catalog (lfc-ls lfc-mkdir)

4.1 Listing the virtual organisation

```
lfc-ls /grid/hungrid
```

4.2 Making a personal catalog -for example - with your <LOGIN_NAME>

```
lfc-mkdir /grid/hungrid/<LOGIN_NAME>
```

For example:

```
lfc-mkdir /grid/hungrid/speci13
```

5 Let use relative names by setting LFC_HOME (LFC_HOME)

5.1 Defining the environment variable

```
export LFC_HOME=/grid/hungrid/<LOGIN_NAME>
```

For example:

```
export LFC_HOME=/grid/hungrid/speci13
```

5.2 Control:

```
lfc-ls ../..
```

6. Creating a GRID file copy from one of our existing files in the local file system and use the existing file catalog to reference it (lcg-cr)

6.1 Let us create a local file

```
history > <LOCAL_FILE_NAME>
```

For example:

```
history > myHistory
```

6.2 Let us explore which Storage Element we can use for the GRID files in our Virtual Organisation "hungrid":

```
lcg-infosites --vo hungrid se
```

The output looks like this:

```
*****  
These are the related data for hungrid: (in terms of SE)  
*****
```

Avail Space (Kb)	Used Space (Kb)	Type	SEs
1448906228	11294896	disk	grid100.kfki.hu
352916	630136	disk	n40.hpcc.szta.ki.hu

6.3 Creating the GRID File

The first string of the output of 6.2 is the URL of our Storage Element (SE) and we will use this in the destination (-d) tag of our subsequent command which makes a GRID copy from the local file <LOCAL_FILE_NAME> (for example "myHistory") and lets it reference by a <LFN_NAME> -for example - by the symbolic name "historyOnGrid":

```
lfc-cr --vo hungrid -d grid100.kfki.hu \
-l lfn:<LFN_NAME> file:<OWN_WORKING_DIRECTORY>/<LOCAL_FILE_NAME>
```

For example:

```
lfc-cr --vo hungrid -d grid100.kfki.hu \
-l lfn:historyOnGrid file:/home/specil3 /myHistory
```

If the creation was successful the command returns the grid unique identifier (guid) of the grid file. For example something like that:

```
guid: 3332ba41-260d-45fe-a84c-dfe9432e7c4b
```

6.4 Controlling the result by the Catalog

```
lfc-ls
```

In the listing the line <LFN_NAME> (in our example historyOnGrid) should appear.

7 Making a new symbolic reference in the catalog to our Grid file

(lfc-ln lcg-lg lcg-la)

Fallacy !!! The first parameter must be of "absolute" path!

7.1 Making the alias for a new <LINK_NAME>

```
lfc-ln -s <ABSOLUTE_LFN_NAME> <LINK_NAME>
```

For example:

```
lfc-ln -s /grid/hungrid/specil3/historyOnGgrid log_2005_07_05
```

7.2 Let us control the result by

```
lfc-ls
```

The lines

```
historyOnGrid  
log_2005_07_05
```

should appear in the listings.

7.3 The other kind of control is that the new catalog entry should point to the same grid unique identifier (See in 6.3)

```
lfc-lg --vo hungrid lfn:<LFN_NAME>  
lfc-lg --vo hungrid lfn:<Link_NAME>
```

For example:

```
lfc-lg --vo hungrid lfn:historyOnGrid
```

```
guid:3332ba41-260d-45fe-a84c-dfe9432e7c4b
```

```
lcg-lg --vo hungrid lfn:log_2005_07_05  
guid:3332ba41-260d-45fe-a84c-dfe9432e7c4b
```

7.4 The **lcg-la** lists all aliases:

```
lcg-la --vo hungrid \  
lfn:{<Link_NAME>|<LFN_NAME>}
```

For example:

```
lcg-la --vo hungrid lfn:historyOnGrid  
lfn:/grid/hungrid/speci13/historyOnGrid  
lfn:/grid/hungrid/speci13/log_2005_07_05
```

8. Associating user comments to a file

(lfc-setcomment)

8.1 Writing the comment

```
lfc-setcomment  
lfc-setcomment {<Link_NAME>|<LFN_NAME>} <comment>
```

For example:

```
lfc-setcomment log_2005_07_05 "Its a comment"
```

8.2 Reading the comment

```
lfc-ls --comment {<Link_NAME>|<LFN_NAME>}
```

For example:

```
lfc-ls --comment historyOnGrid  
/grid/hungrid/speci13/historyOnGrid Its a comment
```

9. Deleting the links

(lfc-rm)

9.1 Let us make a temporary link:

```
lfc-ln -s <ABSOLUTE_LFN_NAME>} <NEW_Link_NAME>
```

For example:

```
lfc-ln -s /grid/hungrid/speci13/historyOnGgrid tmp
```

9.2 let us see:

```
lfc-ls  
historyOnGrid  
log_2005_07_05  
tmp
```

9.3 Removing the <NEW_Link_NAME>

```
lfc-rm <NEW_Link_NAME>
```

For example:

```
lfc-rm tmp
```

9.4 let us see the result:

```
lfc-ls
historyOnGrid
log_2005_07_05
```

10. As farewell from the lfc commands we mention the similar LRS catalog with the rmc and lrc commands.

```
lcg-infosites --vo hungrid rmc
lcg-infosites --vo hungrid lrc
```

Returns empty!

11. Copying a grid file in an other SE

(lcg-rep lcg-lr)

11.a Exploring the storage elements:

```
lcg-infosites --vo hungrid se
```

We may find `n40.hpccl.sztaki.hu` as the other SE (See 6.2)

11.b Executing the copy to the storage element `n40.hpccl.sztaki.hu` :

```
lcg-rep --vo hungrid -d n40.hpccl.sztaki.hu \
  lfn:{<Link_NAME>|<LFN_NAME>}
```

For example:

```
lcg-rep --vo hungrid -d n40.hpccl.sztaki.hu \
  lfn:log_2005_07_05
```

12.c Controlling the result:

```
lcg-lr --vo hungrid lfn:{<Link_NAME>|<LFN_NAME>}
```

For example:

```
lcg-lr --vo hungrid lfn:log_2005_07_05
sfn://grid100.kfki.hu/storage0/hungrid/generated/2005-07-01/filebea4b28c-c7ff-4a01-9ff7-8c29de7020ca
sfn://n40.hpccl.sztaki.hu/storage/hungrid/generated/2005-07-05/file50807d83-4678-4739-bccf-031c04d0308b
```

12. Revoking a grid file

(lcg-uf lcg-lg lcg-del)

Here we will use the Storage name instead of logical one to delete the storage element we have created in step 11.

12.a Determining the absolute identifier(guid) of the symbolic name:

```
lcg-lg --vo hungrid lfn:{<Link_NAME>|<LFN_NAME>}
```

For example:

```
lcg-lg --vo hungrid lfn:log_2005_07_05
guid:3332ba41-260d-45fe-a84c-dfe9432e7c4b
```

12.b Let us use the <GUID> and one of the storage name to delete the file from that storage:

```
lcg-uf --vo hungrid <GUID> <SURL>
```

For example:

```
lcg-uf --vo hungrid guid:3332ba41-260d-45fe-a84c-dfe9432e7c4b \
```

```
sfn://n40.hpcc.sztaki.hu/storage/hungrid/generated/2005-07-05/file50807d83-4678-4739-bccf-031c04d0308b
```

12.c Let us controll the result:

```
lcg-lr --vo hungrid lfn:{<Link_NAME>|<LFN_NAME>}
```

For example:

```
lcg-lr --vo hungrid lfn:log_2005_07_05
sfn://grid100.kfki.hu/storage0/hungrid/generated/2005-07-01/filebea4b28c-c7ff-4a01-9ff7-8c29de7020ca
```

12.d An alternative to execute 11.b could have been:

```
lcg-del -s n40.hpcc.sztaki.hu --vo hungrid lfn: log_2005_07_05
```

The basic difference between lcg-uf and lcg-del is that lcg-uf accepts only <GUID> and needs an explicit <SURL> while lcg-del accepts all kind of file definitions and may use the option -a instead of -s <SE> to delete all replicas.

13. Downloading a grid file to our local directory

(lcg-cp)

13.a Executing the copy

```
lcg-cp --vo hungrid lfn:{<Link_NAME>|<LFN_NAME>} \
file:<ABSOLUT_LOCAL_PATH>
```

For example:

```
lcg-cp --vo hungrid lfn:log_2005_07_05 \
file:/home/speci13/Controll
```

13.b Let us control the identity of file with handle <ABSOLUT_LOCAL_PATH> and of <LOCAL_FILE_NAME>

For example:

```
ls -al
-rw-rw-r-- 1 speci13 speci13 3816 Jul 5 10:56 Controll
-rw-rw-r-- 1 speci13 speci13 3816 Jul 1 10:11 myHistory
```