Enabling Grids for E-sciencE

User Interface Plug&Play “combined”

(based on gLite UI 1.1 & LCG UI 2.4.0)

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Information Society

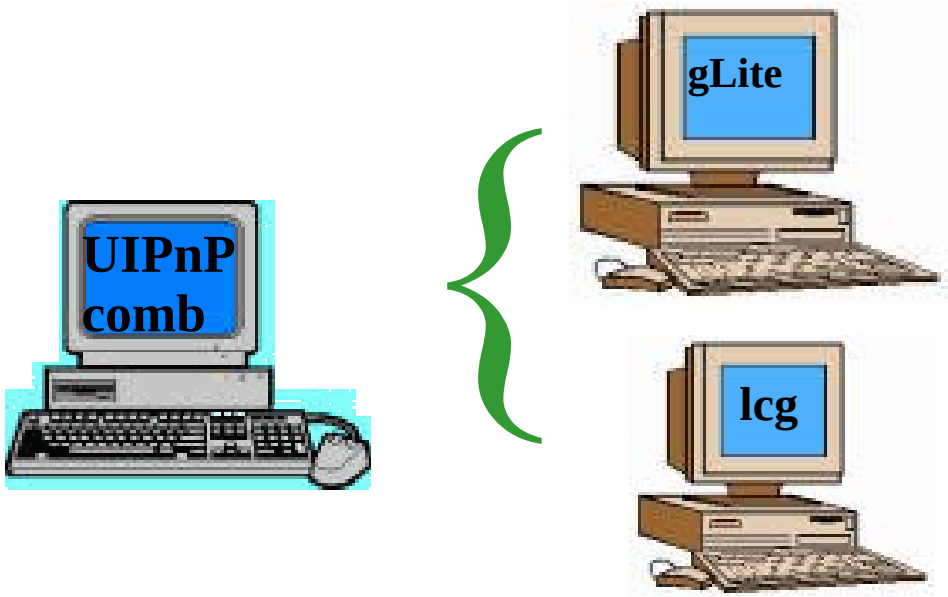
Outline

- Introduction
- Installation
- Configuration
- Job submission services
- Data management services

Introduction

The User Interface PnP "combined" is a merge of:

- **gLite 1.1 UI**
- **LCG 2.4.0 UI**



We will see how to install gLite and LCG UI on the same machine

Installation steps

The main reference to the UI PnP "combined" is:

https://gilda.ct.infn.it/UIPnPcomb/

(there you can find also some documentation)

Enter the directory where you want to install (typically $HOME):

1. *wget* ***https://gilda.ct.infn.it/UIPnPcomb/UIPnPcomb.tar.gz***
2. *tar zxvf* ***UIPnPcomb.tar.gz***
3. *cd* ***UIPnPcomb***
4. *source* ***install.sh***

(For further details look at the README file)

… more on installation

The installation script:

- updates the CRL's if needed
- Creates, if not existing, the .globus directory (anyway you have to insert by yourself personal certificates)
- Creates the JobOutput directory (where the output of your jobs will be stored)
- Sets all the relevant environment variables in .bash_profile
- Sets a cron job to update the CRL's periodically

Configuration

Into $HOME/UIPnPcomb/glite/etc/ edit the file: glite_wmsui_cmd_var.conf

```
[
  NSLoggerLevel = 1 ;
  ErrorStorage = "/tmp/glite/glite-ui" ;
  LoggingSyncTimeout = 10 ;
  DefaultVo = "gilda" ;
  OutputStorage = "~/JobOutput" ;
  rank = - other.GlueCEStateEstimatedResponseTime ;
  DefaultLogInfoLevel = 1 ;
  ListenerStorage = "/tmp/glite/glite-ui" ;
  RetryCount = 3 ;
  DefaultStatusLevel = 1 ;
  requirements = other.GlueCEStateStatus == "Production" ;
  LoggingTimeout = 10 ;
]
```

DefaultVo: set default VO for this UI
OutputStorage: default folder for jobs output

… more on configuration

For each VO you want to support.....

....under $HOME/UIPnPcomb/glite/etc/ you have to define its settings

1. create a folder named as the VO
2. cretae the file glite_wmsui.conf using template from $HOME/UIPnPcomb/glite/etc/vo_template

```
[
VirtualOrganisation = "gilda";
NSAddresses = {"glite-rb.ct.infn.it:7772"};
LBAddresses = {"glite-rb.ct.infn.it:9000"};
MyProxyServer = grid001.ct.infn.it;
]
```

This file defines :

- **VO name**
- **hostname and port of Network Server and Logging&Bookkeeping**
- **hostname and port of MyProxy Server**

… more on configuration

Setting the endpoint for the Fireman Catalog

Into $HOME/UIPnPcomb/glite/etc/services.xml

```
<services>
<service name="gildaCatalog">
<parameters>
<endpoint>https://grid017.ct.infn.it:8443/gilda/glite-data-catalog-service-fr-my
sql/services/FiremanCatalog</endpoint>
<type>org.glite.FiremanCatalog</type>
<version>2.0.0</version>
<status>0</status>
<statusmessage>OK</statusmessage>
</parameters>
</service>
</services>
```

… more on configuration

Setting the endpoint of the gLite I/O Client
Into $HOME/UIPnPcomb/glite/etc/glite-io-client.properties.xml

```
<?xml version="1.0" encoding="UTF8"?>
<service>
  <components>
    <component name="io-client">
      <init>
        <param name="Server">
          <value>glite-se.ct.infn.it</value>
        </param>
        <param name="ServerPort">
          <value>9999</value>
        </param>
        <param name="EncryptName">
          <value>true</value>
        </param>
      </init>
    </component>
  </components>
</service>
```

Preparation for use

As first step you have to put your certificates in $HOME/.globus directory

and set the permission of your certificates with:

- chmod 644 usercert.pem
- chmod 400 userkey.pem

If you have the certificate in p12 (or pfx) format (e.g.: mycert.p12) do:

- openssl pkcs12 –nocerts –in <mycert.p12> –out userkey.pem

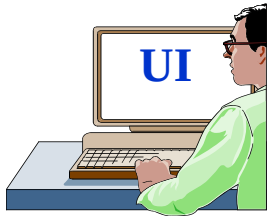
  Enter Import Password : <password used for export the certificates from your web browser>

  MAC verified ok

  Entert PEM pass phrase: <password used for to create the private key>

  Verifing Entert PEM pass phrase: <confirm the password>
- openssl pkcs12 –clcert.pem –nokeys –in mycert.p12 –out usescert.pem

  Enter Import Password:



User security services

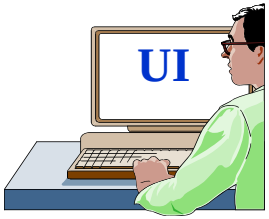
grid-proxy-init

Your identity: /C=IT/O=GILDA/OU=Personal Certificate/L=INFN Sezione di Catania/CN=Passaro Gianluca/Email=gianluca.passaro@ct.infn.it

Enter GRID pass phrase for this identity:

Creating proxy ..... Done

Your proxy is valid until: Mon Mar 21 23:57:06 2005



Credential delegation services

myproxy-init –s grid001.ct.infn.it –l <username>

Your identity: /C=IT/O=GILDA/OU=Personal Certificate/L=INFN Sezione di Catania/CN=Passaro Gianluca/Email=gianluca.passaro@ct.infn.it

Enter GRID pass phrase for this identity:

Creating proxy ..... Done

Proxy Verify OK

Your proxy is valid until: Mon Mar 28 12:59:22 2005

Enter MyProxy pass phrase:

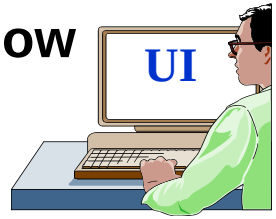
<setting the password for myproxy initialized and different from private key>

Your proxy is valid until: Mon Mar 28 13:00:24 2005

Enter MyProxy pass phrase:

Verifying password - Enter MyProxy pass phrase:

A proxy valid for 168 hours (7.0 days) for user gpassaro now exists on grid001.ct.infn.it.



Sample voms services

voms-proxy-init –voms gildav

Your identity: /C=IT/O=INFN/OU=Personal Certificate/L=Catania/CN=Gianluca Passaro

Enter GRID pass phrase for this identity:

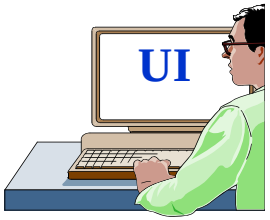
Creating temporary proxy ..... Done

/O=dutchgrid/O=hosts/OU=nikhef.nl/CN=kuiken.nikhef.nl

/C=NL/O=NIKHEF/CN=NIKHEF medium-security certification auth

Creating proxy ..... Done

Your proxy is valid until Fri Jun 10 02:25:46 2005



Job Services

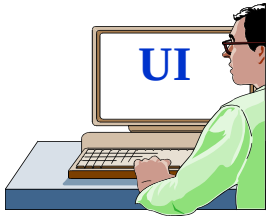
glite-job-list-match --vo gilda hostname.jdl

Selected Virtual Organisation name (from --vo option): gilda
Connecting to host glite-rb.ct.infn.it, port 7772

****

COMPUTING ELEMENT IDs LIST
The following CE(s) matching your job requirements have been found:

CEId
cn01.be.itu.edu.tr:2119/jobmanager-lcglsf-infinite
cn01.be.itu.edu.tr:2119/jobmanager-lcglsf-long
cn01.be.itu.edu.tr:2119/jobmanager-lcglsf-short
…



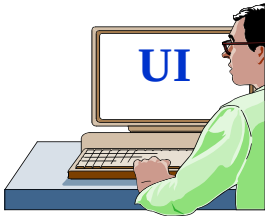
more Job Services

edg-job-list-match --vo gilda hostname.jdl

Selected Virtual Organisation name (from --vo option): gilda
Connecting to host grid004.ct.infn.it, port 7772

****
COMPUTING ELEMENT IDs LIST
The following CE(s) matching your job requirements have been found:

CEId
cn01.be.itu.edu.tr:2119/jobmanager-lcglsf-infinite
cn01.be.itu.edu.tr:2119/jobmanager-lcglsf-long
cn01.be.itu.edu.tr:2119/jobmanager-lcglsf-short
...



more Job Services

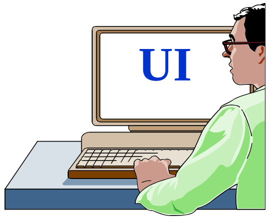
```
glite-job-submit --vo gilda hostname.jdl

Selected Virtual Organisation name (from --vo option): gilda
➡ Connecting to host glite-rb.ct.infn.it, port 7772
➡ Logging to host glite-rb.ct.infn.it, port 9002

*********************************************************************
                    JOB SUBMIT OUTCOME
 The job has been successfully submitted to the Network Server.
 Use glite-job-status command to check job current status. Your job
identifier is:

➡ - https://glite-rb.ct.infn.it:9000/3WFTTW3ph3SZm7t1UqWSyQ

*********************************************************************
```



more Job Services

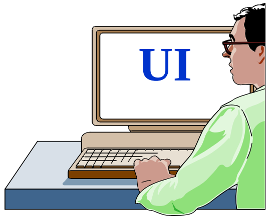
```
edg-job-submit --vo gilda hostname.jdl

Selected Virtual Organisation name (from --vo option): gilda
Connecting to host grid004.ct.infn.it, port 7772
Logging to host grid004.ct.infn.it, port 9002

********************************************************************
                         JOB SUBMIT OUTCOME
 The job has been successfully submitted to the Network Server.
 Use edg-job-status command to check job current status. Your job
identifier (edg_jobId) is:

 - https://grid004.ct.infn.it:9000/tnGRbee9lsxaVhqm4ebNRA

********************************************************************
```

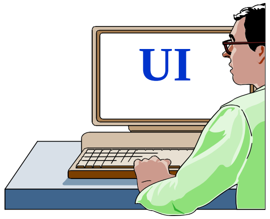


more Job Services

```
glite-job-status
https://glite-rb.ct.infn.it:9000/3WFTTW3ph3SZm7t1UqWSyQ
```

```
*************************************************************
BOOKKEEPING INFORMATION:

Status info for the Job : https://glite-
rb.ct.infn.it:9000/3WFTTW3ph3SZm7t1UqWSyQ
Current Status:     Done (Success)
Exit code:          0
Status Reason:      Job terminated successfully
Destination:        gilda-ce-01.pd.infn.it:2119/jobmanager-lcgpbs-short
Submitted:          Thu Jun  9 15:09:13 2005 CEST
*************************************************************
```

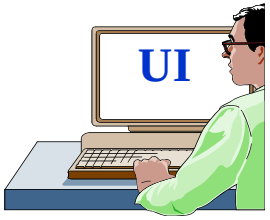


more Job Services

```
edg-job-status
https://grid004.ct.infn.it:9000/tnGRbee9lsxaVhqm4ebNRA

*****************************************************************
BOOKKEEPING INFORMATION:

Status info for the Job :
https://grid004.ct.infn.it:9000/tnGRbee9lsxaVhqm4ebNRA
Current Status:     Done (Success)
Exit code:          0
Status Reason:      Job terminated successfully
Destination:        cn01.be.itu.edu.tr:2119/jobmanager-lcglsf-short
reached on:         Thu Jun  9 13:13:46 2005
*****************************************************************
```



more Job Services

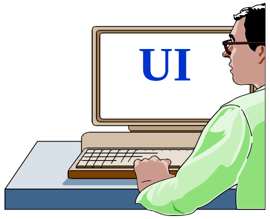
```
glite-job-output
https://glite-rb.ct.infn.it:9000/3WFTTW3ph3SZm7t1UqWSyQ

Retrieving files from host: glite-rb.ct.infn.it ( for https://glite-rb.ct.infn.it:9000/3WFTTW3ph3SZm7t1UqWSyQ )

******************************************************************************
                    JOB GET OUTPUT OUTCOME

 Output sandbox files for the job:
 - https://glite-rb.ct.infn.it:9000/3WFTTW3ph3SZm7t1UqWSyQ
 have been successfully retrieved and stored in the directory:
 /home/gianluca/JobOutput/gianluca_3WFTTW3ph3SZm7t1UqWSyQ

******************************************************************************
```



more Job Services

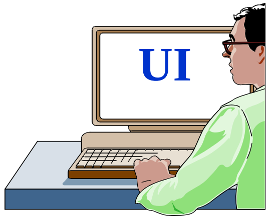
```
edg-job-get-output
https://grid004.ct.infn.it:9000/tnGRbee9lsxaVhqm4ebNRA

Retrieving files from host: grid004.ct.infn.it ( for
https://grid004.ct.infn.it:9000/tnGRbee9lsxaVhqm4ebNRA )

*********************************************************************
                    JOB GET OUTPUT OUTCOME

 Output sandbox files for the job:
 - https://grid004.ct.infn.it:9000/tnGRbee9lsxaVhqm4ebNRA
 have been successfully retrieved and stored in the directory:
 /home/gianluca/JobOutput/gianluca_tnGRbee9lsxaVhqm4ebNRA

*********************************************************************
```



Data Management services

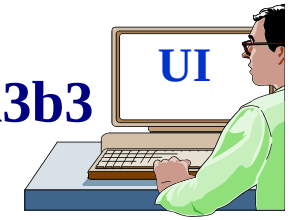
Other commands :

lcg-infosites : Gives information about resource on the Grid
e.g. : CE and SE

lcg-cr : Copies a file to a SE and registers the file in the LRC
e.g. : lcg-cr –vo gilda -d grid009.ct.infn.it -l lfn:myfile file:/home/myhome/myfile

guid:b4ee51eb-b4b0-433f-ab9b-8107ef76d3b3 => myfile

lcg-rep : Copies a file from one SE to another SE and register it in the LRC.
e.g.: lcg-rep –vo gilda -d grid009.ct.infn.it guid:b4ee51eb-b4b0-433f-ab9b-8107ef76d3b3



Data Management services

lcg-lr : **allows to list all the replicas of files that have been successfully registred**

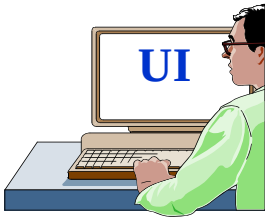
e.g. : lcg-lr --vo gilda lfn:myfile

lcg-cp : Copies a Grid file to a local destination

e.g. : lcg-cp –vo gilda lfn:myfile file:/home/myhome/myfile

lcg-lg : Gets the GUID for a given LFN or SURL

lcg-lg –vo gilda lfn:myfile



Data Management services

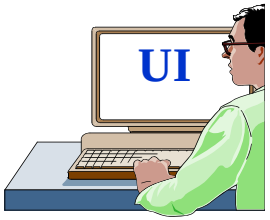
lcg-del : Deletes one file (or one replca or all replicas)

If a SURL is provided as argument then that particular replica will be deleted :

lcg-del –vo gilda -s grid009.ct.infn.it guid:b4ee51eb-b4b0-433f-ab9b-8107ef76d3b3

If is provided -a as argument then all replicas will be deleted :

lcg-del –vo gilda -a guid:b4ee51eb-b4b0-433f-ab9b-8107ef76d3b3

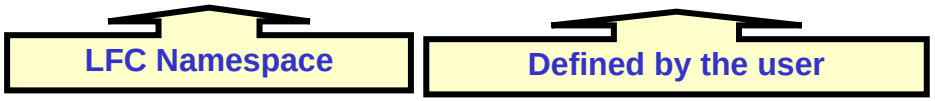


Listing the entries of a LFC directory

lfc-ls *[-cdiLlRTu] [--class] [--comment] [--deleted] [--display_side] [--ds] path…*

where *path* specifies the LFN pathname (mandatory)

- Remember that **LFC has a directory tree structure**
- /grid/<VO_name>/<you create it>



- All members of a VO have read-write permissions under their directory
- You can set LFC_HOME to use relative paths

> lfc-ls /grid/gilda/antonio

> export LFC_HOME=/grid/gilda

> lfc-ls -l antonio

> lfc-ls -l -R /grid

-l : long listing

-R : list the contents of directories recursively: Don't use it!

Creating directories in the LFC

lfc-mkdir [-m mode] [-p] path...

- Where *path* specifies the LFC pathname
- Remember that while registering a new file (using lcg-cr, for example) the corresponding destination directory must be created in the catalog beforehand.
- Examples:

  > lfc-mkdir /grid/gilda/antonio/demo

  You can just check the directory with:

  > lfc-ls -l /grid/gilda/antonio

  drwxr-xrwx 0 19122 1077 0 Jun 14 11:36 demo

Creating a symbolic link

lfc-ln -s file linkname

lfc-ln -s directory linkname

Create a link to the specified *file* or *directory* with *linkname*

– *Examples:*

> lfc-ln -s /grid/gilda/antonio/demo/test /grid/gilda/antonio/aLink

Original File

Symbolic link

Let's check the link using lfc-ls with long listing (-l):

> lfc-ls -l

lrwxrwxrwx 1 19122 1077 0 Jun 14 11:58 aLink -> /grid/gilda/antonio/demo/test

drwxr-xrwx 1 19122 1077 0 Jun 14 11:39 demo

FiReMan catalog

```
> glite-catalog-ls <file/directory to list>
```

Main options :

-l	long output (with permissions)
-s	URL, specify the service endpoint (i.e. the catalog to use)
-c	Display the creation time instead of the modification time
-g	Also display GUIDs

Check all the options with –h

ACL : - for regular files, d for directory, l for symbolic links and v for virtual directories. p indicates the permission to change attribute, while d rights to delete the entry. Successive 12 bits indicates, for user (u), group (g), other (o), permission to read, write, list contents or execute the content. Last two are reserved for metadata use, and so are currently unused. They will show the right to get or set the metadata.

```
> glite-catalog-ls -l /test1103
-pdrwl-gs--r-l-g---------   30  2005-07-18
  11:01:55 /test1103
```

Upload and register a file : glite-put

```
glite-put <localfilename> <remotefilename> [-m <mode>]
  [-c <config>]
```

- glite-put copies a local file to a gLite I/O server, updating also the File Catalog.
- The file is copied in the IO server pointed by the UI's IO client
- The catalog updated is the one associated with that IO server

```
> glite-put file2register lfn:///test1156
[glite_put] Total 0.00 MB |====================| 100.00
  % [0.0 Mb/s]
Transfer Completed:
  LFN                        : /test1156
  GUID                       : 0002bb56-7ce9-12db-bf0e-
  c0a70228beef
  SURL                       : srm://glite-
  se.ct.infn.it:8443/srm/managerv1?SFN=/pnfs/ct.infn.it/
  data/gilda/test1156
  Data Written [bytes]       : 30
  Eff.Transfer Rate[Mb/s]    : 0.000005
```

Check FC entries : glite-catalog-stat

```
glite-catalog-stat [options] URI
```

`glite-catalog-stat` gives all the informations on a catalog entries, including file/directory permissions, GUID, owner/group, SURL location…

It's very useful to verify correct setting of permissions and ownerships

Download a file : glite-get

glite-get <remotefilename> <localfilename> [-c <config>]

- glite-get download locally a file from the IO server pointed by the UI's client

```
glite-get lfn:///emacs localcopy
[glite_get] Total 0.00 MB        |=====================|
  100.00 % [0.0 Mb/s]
Transfer Completed:
  LFN                          : /emacs
  GUID                         : 0032f276-8402-12db-9124-
  c0a70219beef
  SURL                         :
  srm://lxcde08.pd.infn.it:8443/srm/managerv1?SFN=/pnfs/
  pd.infn.it/data/gilda/emacs
  Data Written [bytes]         : 237
  Eff.Transfer Rate[Mb/s]      : 0.000067
```

Remove a file

```
glite-rm <remotefilename> [-c <config>]
```

glite-rm removes a file from the IO server pointed by the UI, updating also the file catalog

```
glite-rm lfn:///emacs
Unlink Completed:
  File            : lfn:///emacs
  Time [s]        : 4.255000
```

Exercise

- Create a text file containing your name, surname and your birthplace
- Copy and register the file assigning as remote file name your username
- Verify correct file creation
- Download the file you've just created, changing its local file name
- Delete the file from the catalog
- Verify the correct file deletion

Questions...