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LFC Administration for Tier2s

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Tier2s tutorial – 15 Jun 2006

www.eu-egee.org

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Enabling Grids for E-sciencE
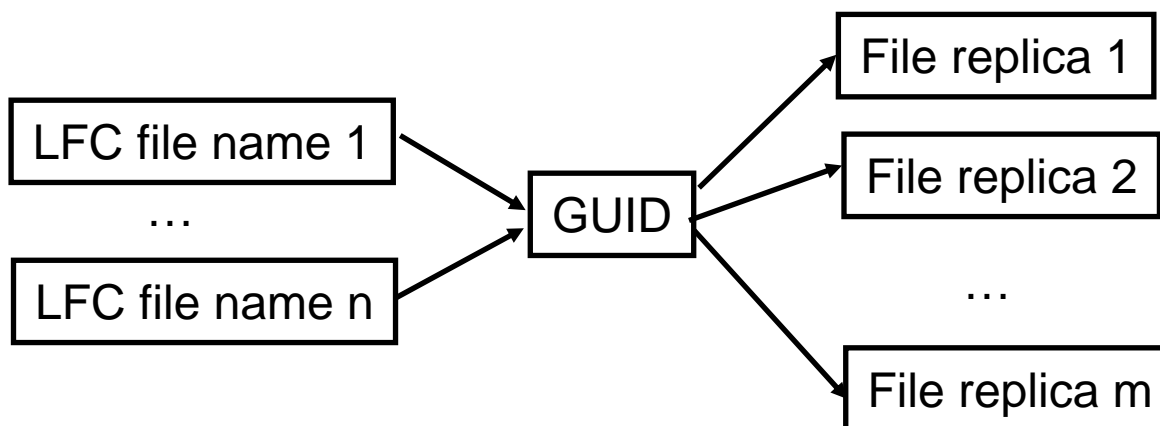
- **Description**

- **Installation**

- **LFC as a service**

- **Typical problems**

- **Documentation / support**

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![egee logo] Enabling Grids for E-sciencE

- **Logical File Name (LFN)**
  - An alias created by a user to refer to some item of data, e.g. "lfn:cms/20030203/run2/track1"

- **Globally Unique Identifier (GUID)**
  - A non-human-readable unique identifier for an item of data, e.g. "guid:f81d4fae-7dec-11d0-a765-00a0c91e6bf6"

- **Site URL (SURL) / Physical FN (PFN) / Site FN (SFN)**
  - The location of an actual piece of data on a storage system, e.g. "srm://srm.cern.ch/castor/cern.ch/grid/cms/output10_1" (SRM)
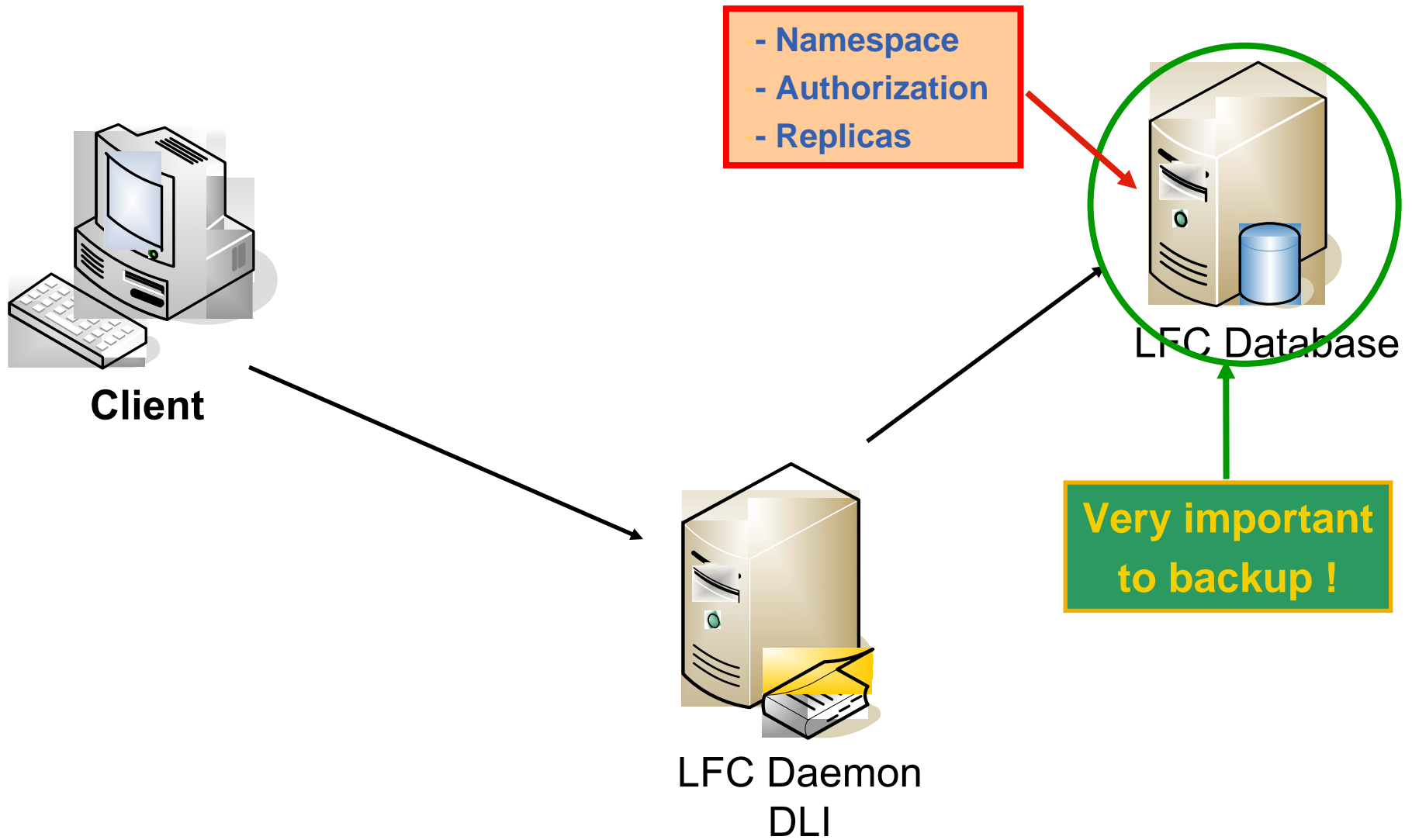
```
LFC file name 1 ─┐
      …          ├──→ GUID ──→ File replica 1
LFC file name n ─┘          ──→ File replica 2
                                     …
                            ──→ File replica m
```

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- **Hierarchical namespace**

  > lfc-ls -l /grid/dteam/tests/tutorial

  drwxrwxr-x   2 18947   2688   0   Jun 09 11:19   directory1

  -rw-rw-r--   1   18947   2688   179 Jun 09 11:17 file.6008

  -rw-rw-r--   1   18947   2688   179 Jun 09 11:18 file.6009

- **Deployment status**
  - **31** central LFCs for **91** VOs, with **31** DLIs
  - **62** local LFCs for **65** VOs, with **51** DLIs

Client

- **Namespace**
- **Authorization**
- **Replicas**

LFC Database

Very important to backup !

LFC Daemon
DLI

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Enabling Grids for E-sciencE

- **RPMs provided for:**
  - **SLC3**
  - **Itanium**
  - **Mac OS X**

- **LFC should be able to build on:**
  - **SLC4**
  - **Other 64 bit platforms**

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- **4 questions before installation:**
  - **For <u>each VO</u>, central or local LFC ?**
    - Different information published
    - same LFC server <u>can be used</u> for central and local LFCs
  - **For <u>each VO</u>, should the DLI run ?**
    - DLI is **insecure**
    - If yes (for VO1) and no (for VO2),
      different LFC servers <u>have to be setup</u>.
  - **For <u>each VO</u>, what is the expected load?**
    - Do I need several LFC servers ?
  - **Can I open port 5010 at my site ?**
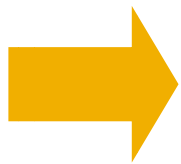
How many LFC servers should be installed

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- **YAIM configuration :**

Site-info.def

$MY_DOMAIN	
$MYSQL_PASSWORD	$LFC_DB
$LFC_HOST	**$LFC_CENTRAL**
$LFC_DB_PASSWORD	**$LFC_LOCAL**
$LFC_DB_HOST	**$VOS**

  – Central LFCs:
  - $LFC_CENTRAL
  – Local LFCs:
  - $LFC_LOCAL + $VOS not listed in $LFC_CENTRAL

- **YAIM installation :**
  - ./install_node site-info.def glite-LFC_mysql
  - ./configure_node site-info.def glite-LFC_mysql

- **NEW ! glite-LFC_oracle configuration supported**

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- **Used for matchmaking**

- **DLI is <u>insecure</u> by design**
  - because the RB is insecure

- **How to stop the DLI ?**
    - chkconfig lfc-dli off
    - service lfc-dli stop

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- **LFC info provider**
  - Until YAIM 3.0.0-12: static information
  - Next YAIM version: dynamic information
    - lcg-info-provider-lfc called by lcg-info-provider-software-wrapper

- **What is published ?**
  - Central LFC
    GlueServiceType: **lcg-file-catalog**
  - Local LFC
    GlueServiceType: **lcg-local-file-catalog**
  - Central Data Location Interface
    GlueServiceType: **data-location-interface**
  - Local Data Location Interface
    GlueServiceType: **local-data-location-interface**
  - For all
    GlueServiceOwner: myVO1
    GlueServiceOwner: myVO2
    GlueServiceAccessControlRule: myVO1
    GlueServiceAccessControlRule: myVO2

- **Port 5010 needs to be open**

- **Can I use another port ? Yes, but…**
  - On the server:
    - Start lfcdaemon with other port
  - In the Information System:
    - publish the different port (change info-provider yourself…)
  - On the client:
    - export LFC_PORT=5011

➡ **Avoid !**

- **Warning !**
  - The multithreaded applications have to use sessions / transactions everywhere, to guarantee that the correct port is always used

- **On the LFC server (as <u>root</u>)**
  - export LFC_HOST=mylfc.domain.name
  - lfc-ls –l /grid
  - lfc-mkdir /grid/myVO/test_dir
  - lfc-rm –R /grid/myVO/test_dir

- **From a UI (as a <u>user</u>)**
  - export LFC_HOST=mylfc.domain.name
  - grid-proxy-init
  - lfc-ls /grid/myVO
  - lfc-mkdir /grid/myVO/test_dir
  - lfc-rm –R /grid/myVO/test_dir
  - lcg-cr --vo myVO –d mySE.domain.name file:/path/to/file

- **Repeat with:**
  - voms-proxy-init –voms myVO

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- **From a UI (as a <u>user</u>)**
  - Central LFCs
    - lcg-infosites --vo myVO lfc
  - Local LFCs
    - lcg-infosites --vo myVO lfcLocal

Enabling Grids for E-sciencE

- **Description**

- **Installation**

- **LFC as a <u>service</u>**
  - Administration
  - Monitoring

- **Typical problems**

- **Documentation / support**

Enabling Grids for E-sciencE

- **Permissions/ownership**
  - lfc-chmod
  - lfc-chown (only admin can use it)

- **Virtual uid, gid**
  - lfc-ls –l …
  - lfc-enterusrmap, lfc-modifyusrmap
  - lfc-entergrpmap, lfc-modifygrpmap

- **POSIX ACLs**
  - lfc-getacl, lfc-setacl

- **Secondary groups not supported yet**

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- **Monitoring example (CERN):**

Alarm name	Description	Comments
LFCDAEMON_WRONG	no lfcdaemon process running	
LFC_DLI_WRONG	no lfc-dli process running	
LFC_DB_ERROR	ORA-number string detected in /var/log/lfc/log	Oracle specific
LFC_NOREAD	can't stat given directory	Ex: /grid/ops
LFC_NOWRITE	can't utime on file	
LFC_SLOWREADDIR	excessive time taken to read given directory	Time > 10s
LFC_ACTIVE_CONN	number of active connections to LFC	use netstat

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Enabling Grids for E-sciencE

- **Security problems**
  - Host certifcate, key
  - CRLs
  - /etc/grid-security/vomsdir doesn't contain VO VOMS server

- **Permissions problem**

- **"Invalid Argument" error in lcg_utils**
  - Incorrect information published (often)
  - **More detailed error message in LCG-2.7.0 and gLite3.0 !**

- **"File exists" error with lfc-rm**
  - This is normal : file cannot be deleted if replicas still exist

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- **Step 1: user's mapping**

```
                    ┌─────────────────┐
                    │  Which proxy ?  │
                    └─────────────────┘
                     ↙                ↘
  ┌──────────────────────────┐   ┌──────────────────────────┐
  │  grid-proxy-init /        │   │  voms-proxy-init -voms   │
  │  simple voms-proxy-init   │   └──────────────────────────┘
  └──────────────────────────┘                │
              │                                │
  ┌──────────────────────────┐                │
  │  lcgdm-mapfile OK ?       │                │
  └──────────────────────────┘                │
              ↘                               ↙
            ┌─────────────────────────────┐
            │  User's virtual uid, gid ?  │
            └─────────────────────────────┘
              ↙                          ↘
    ┌──────────────┐          ┌──────────────────┐
    │ LFC log file │          │  Cns_groupinfo   │
    └──────────────┘          │  Cns_userinfo    │
                              └──────────────────┘
```

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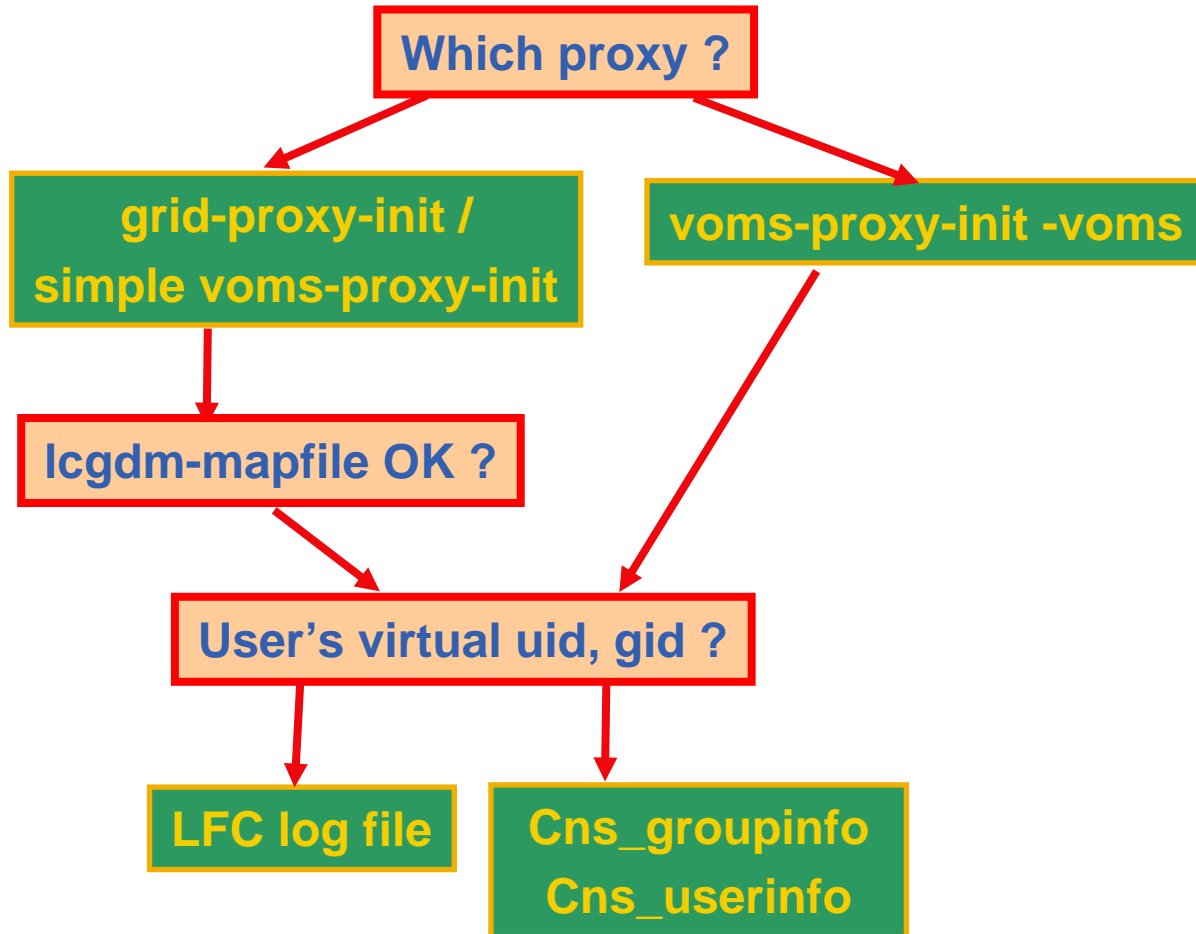
- **Step 2: check permissions on file / directory**
  - **Permissions / ownership ?**
    - lfc-ls –l …
    - lfc-getacl …
  - **ACLs ?**
    - lfc-getacl

- **Step 3: if needed, change them…**
  - **Permissions / ownership**
    - lfc-chmod
    - lfc-chown
  - **ACLs**
    - lfc-setacl

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- **Particular authorization problem**
  - **The LFC doesn't support secondary groups yet**
  - **Two different VOMS roles are mapped to two different gids**
  - **The same user might not be able to access his/her own file, depending on his/her VOMS credentials**

- **Possible solutions:**
  - **1) Use ACLs**
    - lfc-setacl

  - **2) Do not give same virtual gid to different VOMS roles : it will not be supported when migrating to secondary group support…**

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- **Main LFC/DPM documentation page**
  - https://twiki.cern.ch/twiki/bin/view/LCG/DataManagementTop

- **LFC Admin Guide**
  - https://twiki.cern.ch/twiki/bin/view/LCG/LfcAdminGuide

- **Troubleshooting page**
  - https://twiki.cern.ch/twiki/bin/view/LCG/LfcTroubleshooting

Enabling Grids for E-sciencE

- **Contact GGUS helpdesk@ggus.org**
  - your ROC will help
  - If needed, LFC experts will help

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Questions ?

helpdesk@ggus.org

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