DCACHE INTRODUCTION COURSE

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GLUE AND DCACHE'S "GLUE INFOPROVIDER"

GLUE (originally "**G**rid **L**aboratory **U**niform **E**nvironment") is a notation or language used to describe grid-environments and their resources.

It is edited by the GLUE Working Group within the Open Grid Forum and used in the **G**rid **I**nformation **S**ystems of many grids (including the EGI and the LCG).

There are a few concrete representations for GLUE including a XML- and a LDIF (**L**DAP **D**ata **I**nterchange **F**ormat)-format.

dCache includes the so called "GLUE `info-provider`", a program which queries dCache's `info`-service and translates some of its data into a GLUE version 1.3 and 2.0 representation using the LDIF-format.

Some of the required data is however grid-specific and cannot be generated from dCache's information system.
Instead, it must be configured manually via the files `/etc/dcache/dcache.conf` and `/etc/dcache/info-provider.xml`.

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Grid Certificates, Proxy Certificates And VOMS

Most services within grids are secured using X.509 certificates, which are used for authentication (and thus indirectly for the authorisation-process), digital signatures and encryption.

Many **C**ertificate **A**uthorities which provide certificates intended for grid-environments are organised in one of the regional **P**olicy **M**anagement **A**uthorities (currently these are the EUGridPMA, the TAGPMA or the APGridPMA). The PMAs in turn are organised in the International Grid Trust Federation.
Certificates issued from a CA that is member of the IGTF are usually called "grid certificates".

Proxy certificates are short-living certificates that are often used on behalf of the actual grid certificates.

The **V**irtual **O**rganization **M**embership **S**ervice allows the management of users belonging to multiple **V**irtual **O**rganizations and having attributes like roles or capabilities.
This information can be securely attached to the proxy certificates for later usage.

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Common Tools And Clients

The following lists some tools and clients that should be known:
- Globus Proxy Utils
  These include `grid-proxy-init`, `grid-proxy-destroy` and `grid-proxy-info` which are used to manage proxy certificates (without VOMS-support).
- VOMS Clients
  These include `voms-proxy-init`, `voms-proxy-destroy`, `voms-proxy-info` and `voms-proxy-list` which are used to manage proxy certificates (with VOMS-support).
- fetch-crl
  This can be used to keep **C**ertificate **R**evocation **L**ists up-to-date.

- EGI IGTF Release
  This package depends on the current CA root certificate packages used within the EGI and the LCG and is based upon the IGTF distribution.
- LCG-VOMS-Certificates
  This package contains the certificates used by the LCG VOMS-servers.

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COMMON TOOLS AND CLIENTS

- DCAP Client
  Includes `dccp` as well as some C-libraries which are used to read files from or write them to a dCache cluster, using dCache's legacy native access protocol DCAP in its different flavours.
- Globus GASS Copy Programs
  These include `globus-url-copy` which is used to read or write files using the gsiFTP ("GridFTP")-protocol.
- European DataGrid GridFTP Clients
  These include `edg-gridftp-ls`, `edg-gridftp-exists`, `edg-gridftp-mkdir`, `edg-gridftp-rename`, `edg-gridftp-rm` and `edg-gridftp-rmdir` which can be used for miscellaneous file operations via the gsiFTP ("GridFTP")-protocol.
- SRM Clients
  These include `srmcp`, `srmls`, `srmmkdir`, `srmmv`, `srmrm` and `srmrmdir` which are used for miscellaneous file operations as well as some other clients which are used to retrieve meta-data or manage permissions and space via the SRM-protocol.

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COMMON TOOLS AND CLIENTS

- LCG Utilities
  These include `lcg-cr`, `lcg-cp`, `lcg-rep`, `lcg-del`, `lcg-gt`, `lcg-lr`, `lcg-lg` and `lcg-la` which are used for miscellaneous file operations within the LCG, taking into account LCG-specific concepts like the LCG File Catalog.

Some software distributions (for example gLite) provide some similar tools and clients like the above or wrappers around them.