dCache

LCG Review 2006

Patrick Fuhrmann
for the dCache People
Roadmap

Organisational Overview

The Team
The Funding
Agreement with LCG deployment
dCache support

Technical Overview

Automated Packaging
Installation and configuration (YAIM)
VOMS support
Extended Protocol Support
Support of huge installations

Short/Medium term plans
Organisational Overview

Responsibility, dCache
Patrick Fuhrmann  Rob Kennedy

Core Team (Desy and Fermi)
Jon Bakken
Ted Hesselroth
Alex Kulyavtsev
Birgit Lewendel
Dmitri Litvintsev
Tigran Mrktchyan
Martin Radicke
Owen Synge
Elena Tews
Vladimir Podstavkov

The Team

Responsibility, SRM
Timur Perelmutov

External

Development
Nicolo Fioretti, BARI
Abhishek Singh Rana, SDSC

Support and Help
Maarten Lithmaath, CERN

The Team

Owen Synge
Elena Tews
Vladimir Podstavkov

Patrick Fuhrmann  LCG Review 2006  Sep 25, 2006
## Organisational Overview

## Funding

### Development and support

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<tr>
<th>Organization</th>
<th>FTE</th>
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</thead>
<tbody>
<tr>
<td>Fermi Lab.</td>
<td>3 FTE (includes operation)</td>
</tr>
<tr>
<td>OSG</td>
<td>2.5 FTE (In preparation)</td>
</tr>
<tr>
<td>DESY Lab.</td>
<td>2 FTE</td>
</tr>
<tr>
<td>D-Grid</td>
<td>1.5 FTE</td>
</tr>
<tr>
<td>LCG</td>
<td>0.5 FTE</td>
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Source: Eileen Berman, FNAL
Organisational Overview

Agreement with LCG deployment

Stable dCache release in CERN apt repository
Evaluation dCache release in DESY apt repository

LCG Deployment group performs dCache installation verification

gLite interoperability verification by LCG deployment against
dCache instance at DESY

dCache contact person at CERN (in LCG deployment group)
Organisational Overview

**dCache support**

- 1 full FTE responsible for dCache support
  means

  Support ticket system behind: support@dCache.ORG

  User mailing list: user-forum@dCache.ORG

  Contact to LCG and grid PP

  Near future: The Book

- dCache source code available at dCache.ORG
  Special license
  Support only for RPM from dCache.ORG
Packaging

Focus on automated testing and packaging

code in cvs

compilation (triggered by 'cvs commit')

RPM generation (Still manually triggered)

Automated Test Suite (Partially done)

into APT (unstable, testing)

web page
Technical Overview

**Installation and Configuration**

Significantly improved YAIM installation

Customization and tuning in just one setup file (dCacheSetup)
  (for experts: no need to change XXX.batch files any more)

First goal reached:
  Single host installation and configuration in 10 minutes
  (including all necessary LCG components and info provider)

Next Step:
  Installation and configuration part of dCache
  YAIM justs points to dCache internal installation mechanisms
DCache 1.7.0 supports Extended Certificates (voms-proxy-init) including VO's and Roles

Migration path

dcache.kpwd on each host

With 1.7.0

dcache.kpwd (centrally)

extended gridmap file (centrally)

*DN may be in different VO's*

*DN may have a role*

*All DN of a VO allowed (exclude list)*
Technical Overview

Extended Protocol support

xRoot protocol support

xRoot natively supported by dCache (including load balancing)
(Has been positively tested at various sites already)

Supports ALICE security model (Catalog based authorization)
(DESY tests ok, CERN tests will be done soon)

gsi xRoot: we need more information on this

passive dCap

dCap protocol now supports passive transfers to handle NAT and firewalls
Support of huge installations

The feature below need to be manually configured

Multiple I/O queues (already in use at USCMS sites and IN2P3)
  Handles fast and slow transfers differently

File hopping
  Arrival of files triggers further transfers to other pools or HSM
  Improves disk performance on HSM restore (Used by Jon Bakken)

Central Flush Management
  Flush to HSM is centrally managed to improve
  Tape drive throughput

Still missing: Improved HSM restore optimization
  Hints to HSM before files are actually requested from HSM

See release notes at: http://www.dCache.ORG/manuals/Book
Technical Overview

File hopping and central flush

Backup Store

Master Store

Read Only Cache

Replicate on high load

to Client

From Client

non RAW Data immediately copied to read pools

RAW Data 2. copy

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Short Term plans

WLCG SRM 2.2 implementation

Enormous consumption of human resources

Full consequences of SPEC not clear

Significant changes in dCache kernel required

We are still in time :-)

Some space transitions are hard to implement but needed
  e.g: Tape 0 Disk 1    ---->   Tape 1 Disk X

For details see Maartens talk.
Medium Term plans

Chimera (improved file system)

- Allows to integrate ACLs
- Allows to integrate Quotas
- Chimera is in beta testing
- Deployment postponed to spring 2007
Medium Term plans

More on protocols

FTP (2)

Hope to have this integrated soon

NFS4.1

Spec still undergoes changes
In Use at

Tier I centers:
- FNAL
- BNL
- IN2P3
- SARA
- Triump
- Nordu grid
- gridKa
- (still RAL)

Tier II centers:

Germany
- LCG: Aachen, DESY, Freiburg, Dortmund, Darmstadt (GSI)
- d-Grid: Juelich (ZAM), Berlin (ZIB)

UK
- 30% of gridPP, UK

US
- CMS: 7 sites
- ATLAS 7 sites in preparation

Italy
- INFN: Bari, Torino

Poland, Bulgaria, Spain

Canada

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dCache, the Book

www.dCache.ORG

need specific help for you installation or help in designing your dCache instance.

support@dCache.ORG

dCache user forum

user-forum@dCache.ORG