Evolution, by tackling new challenges.

Patrick Fuhrmann

On behave of the project team
dCache strategy

After 10 years of storage technology support, we feel the responsibility for sites using dCache.
Therefore our main concern is the efficiency and evolution of those sites in terms of new hardware and software technologies.
And not to forget: 3 of those sites are actually the authors of that technology.
We try to achieve this in various ways:
We try to acquire National and European funding and we partner with projects and sites to provide a sustained support infrastructure. (dCache.org)
We focus on activities, allowing sites to use our technology for all their customers, not only a particular community. “Alessandra Forti presentation at the WLCG WS”
One crucial prerequisite is to provide industry standard interfaces and protocols to your storage.
    Collaborating with CERN DM on various topics in that direction.
    Great success with http, even in WLCG (See presentations by Oliver Keeble and Johannes Elmsheuser)
Evaluating new trends in hardware and software, which we might integrate in dCache.
Exploring new communities to broaden the spectrum of our services.
Who are we
The dCache.org collaboration

About developers and support people in total and expecting 3 more within the next 3 months.
Funding and high level objectives
Funding and Objectives

Standards
2010

NFS 1 pNFS
TT WebDA
Contributing to the Dynamic Federation

2013

Deploying new technologies into production and exploring new communities

2021

ata
Multi Tier Storage
Quality of Service
Migration Archiving

INDIGO DataCloud
11 Million Euros
30 months duration

partners

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About 00.000 Euro for dCache.

more FTEs

Major objectives for dCache is:

“ata S t” and

“S t a n d St a ”
More interesting Challenges
Exploring new communities

...ntensity Frontier (F) at Fermilab.

quote “Craig Group” (plenary talk)
Parallel NFS

Clients are directly receiving data from distributed storage nodes.

Industry standard, pNFS client in the Linux Kernel.

Already in use for smaller groups at DES.

Slowly migrating CMS Grid worker nodes at DES to NFS 1 pNFS data access.

Encouraging results (next slide)

Time consuming, as bugs or misunderstandings are still found in the Linux driver implementation.

Disadvantage of standards
ob Efficiency (NFS dCap)

Wall Time

ob Efficiency (C)

Execution Time (hours)

NFS .1 pNFS

dCap
Exploring more

German support for the human rain project (SM)

lich Aachen Research Alliance

Distributed dCache between Aachen and lich
dCache's ability to select pools close to the client or to move data closer to the client made it a perfect match for their requirements.

Two cities, one system.
Similar to NDGF (Countries one system)
Second copy automatically generated at the other location.
Or second location just used as a cache.
Projects in C

C jobs on supercomputer

C jobs get access to dCache storage.
Requirement: CDM

SO EC Standard

Important features for the C use cases:

- File selection based on metadata (not file name based)
- Supporting remote data lifecycle
  - Ring to release from fast storage
- Allow tape migration

Required by EG Fed Cloud

Supported by ND GO Data Cloud

See presentation on CDM by aul Millar
Scientific Data Cloud

First implementation of the idea:

DES CLO D
Scientific Data Cloud

High Speed Data Management

Fast Analysis
NFS .1 pNFS

Wide Area Transfers
(Globus Online, FTS)
by GridFT

Syncing and Sharing withOwnCloud

See auditorium presentation
Small file migration to tape

dCache

Currently used by

DES  light sources
D    E
NE T : DES  CLO  D

See also  oster and  resentation by Karsten Schwan
Responding to new technologies
Response to Ceph

CE complements dCache perfectly.
  Simplifies operating dCache distributions.
  dCache accesses data as object store anyway already.
dCache is evaluating a two step approach.
  Each pools sees its own object space in CE
  All pools have access to the entire space, which is a slight change of dCache pool semantics.
Would merge CE and dCache advantages
  Multi Tier (Tape, Disk, SSD)
  Multi protocol support for a common namespace.
    All protocols see the same namespace
  All the dCache AA features
    Support for 0, Kerberos, username password
Summary

“On Top” funding secured again for 3 more years.

Storage services based on standards extended our user base towards C and long tail of science communities and helps sites to reduce software stack costs.

Wider user base broadens our feature set.

Continue to investigate new hardware and software technologies and will make them available to our customers.
Don’t forget

upcoming 1st dCache Workshop

18 – 20 May 2015
Amsterdam, Science Park
Visit www.dCache.org for details
The END

further reading

www.dCache.org