dCache SE in LCG-2

- History
- Sites today
- Caveats
- Rpm
- Configuration
- Compatibility
• CERN IT/GD/CT started work on dCache in Feb. 2004

• Uncovered many issues preventing *grid* deployment
  - Packaging, various misbehaviors, missing functionality
  - Most matters were addressed by the developers
    - Priorities different for different projects

• Remaining problems do not seem showstoppers:
  - [http://cern.ch/litmaath/dCache](http://cern.ch/litmaath/dCache) (bit out of date)
  - See below, though

• dCache part of LCG-2_4_0 (Apr. 2005) and later
$ ldapsearch -x -h lcg-bdii.cern.ch:2170 -b o=grid | grep -c
  '^GlueSARoot.*/pnfs/'
97
$ ldapsearch -x -h lcg-bdii.cern.ch:2170 -b o=grid | grep
  '^GlueSARoot.*/pnfs/' | sed 's-.*/pnfs/--;s-/.*--' | sort -u
cern.ch
desy.de
ft.uam.es
gridpp.rl.ac.uk
gsi.de
ifh.de
itep.ru
pp.rl.ac.uk	
tier2.hep.man.ac.uk
zam.kfa-juelich.de
zib.de

...plus Fermilab and other sites that do not expose /pnfs...
Caveats

- IT/GD does not propose that each site switch to dCache for all its storage needs:
  - Simple standard configurations are certified w.r.t. other LCG-2 middleware
    - Services sufficiently stable, etc.
  - Non-trivial problems will be forwarded to dcache.org
  - Alternative SE solutions include Castor and DPM
- dCache access to byte ranges:
  - Experiment applications use rfio, not (gsi)dcap
  - gsidcap supported by GFAL → applications should use GFAL
• Standard dCache rpms for LCG-2_6_0:
  - pnfs-3.1.10-15
  - d-cache-client-1.0-99
  - d-cache-core-1.5.2-82
  - d-cache-opt-1.5.3-83
  - postgresql-7.4.6-2PGDG etc.

• Special rpms for LCG-2:
  - d-cache-lcg-5.1.0-1
    • Contains grid-mapfile2dcache-kpwd script to convert standard grid-mapfile into /opt/d-cache/etc/dcache.kpwd (orig. by Derek Ross)
    - Hack needed to deal with “Email=…” in DNs for Java Globus CoG kit
  - lcg-info-dynamic-dcache-1.0.8-1_sl3
    • Contains dynamic part of info provider for LCG-2 information system
    - Calculate available and used spaces
    - Code bit of a hack…
• Script was provided by d-cache-lcg rpm, now YAIM function maintained by GridPP (Jiri Mencak)

• A few standard configurations are supported:
  – Head node can run all services except disk pool, pool nodes not directly accessible
    • Not good for scaling
  – Same, but extra door nodes can be set up
    • Already better…
  – Pool nodes can run doors
    • Best for scaling
  – Head node can run everything
    • Could be OK for small SEs

• dCache admin guide created by Judit Novak (CERN) and Matthias de Riese (DESY)
  – To be merged with The Book
  – Script available to vacate a pool → no longer needed
• Note to developers and site admins:
  – A dCache SE must be usable as a standard LCG-2 SE

• That means:
  – Standard tools like lcg-cr should work

• Which means:
  – SE must correctly appear in information system
  – SE server code must be able to handle client code used in LCG-2, even if the current client code is badly behaved (we cannot fix the client code and upgrade the whole grid overnight)
    • Example: lcg-cr currently does not set file size in SRM put request
      – Bad for space reservation, but default can be used
      – Will be fixed for lcg-cr and friends
      – GFAL cannot set the file size, because POSIX open() cannot