dCache federation design

Storage only SITE with tape

Head Node

Headnode SITE Plus storage

Request
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Request

DATA
Features available

- Federation works for essentially all protocols
  - http/WebDAV
  - gridFTP
  - NFS4.1 / pNFS
  - dCap/xrootd
- Preferred write location depending on IP (location) or directory path (if requested)
- Preferred ‘local’ read access if data is available
- Replication
  - Automatic replication on write (to remote site)
  - Automatic lazy replication with ‘n’ copies.
  - Permanent replication based on data type.
  - Manual ‘scheduled’ data transferred for improved data location or hardware component decommissioning
Considerations

- Secure component communication between sites.
- Component upgrade compatibility within a major release.
- Trying the same between major releases but not always possible.
- Hot standby of headnodes possible.
- Upgrading headnode means ‘deadtime’ for the entire system.
- “Short downtime” mechanisms are possible but never tried out.
NDGF Tier 1

4 Countries

One dCache

Uni of Bergen
Uni of Oslo
PDC
Nordu Net
HPC Center North
CSC
National Supercomputer Center

dCache head node

Slide stolen from Mattias Wadenstein, NDGF