



# *dCache status as of May 2008*

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support and funding by





- *Overview*
- *dCache Releases* : 1.8.0-12 -->> 16
- *LHC challenges* : Feb, May CCRC
- *MoU's* : SRM 2.2 WLCG addendum
- *Support* : dCache support workshops in Hamburg and Cologne
- *Work in progress* : http, Information Provider, Chimera, nfs 4 ...
- *Future* : NFS 4.1



# The dCache SE implementation



## Black Box View

### High Level Services

Resilient Manager  
Admin Module (ssh, jpython)  
Maintenance Module  
Flush Manager  
Hopping Manager

### dCache Core



Information Protocol(s)

Storage Management  
Protocol(s)  
SRM 1.1 2.2

### Tape Storage

OSM, Enstore  
Tsm, Hpss, DMF

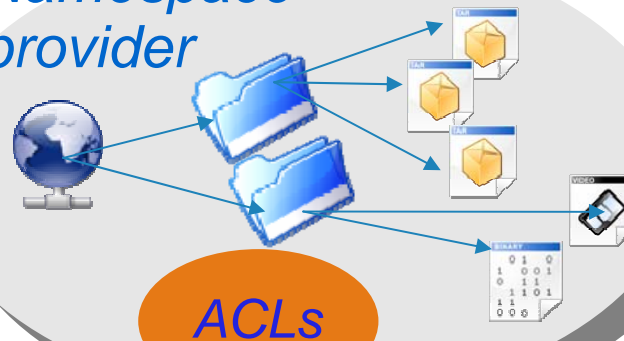


Data & Namespace  
Protocols

(NFS 4.1) dCap  
ftp (V2) gsiFtp  
xRoot  
(http)

Namespace ONLY  
NFS 2 / 3

### Namespace provider



ACLs

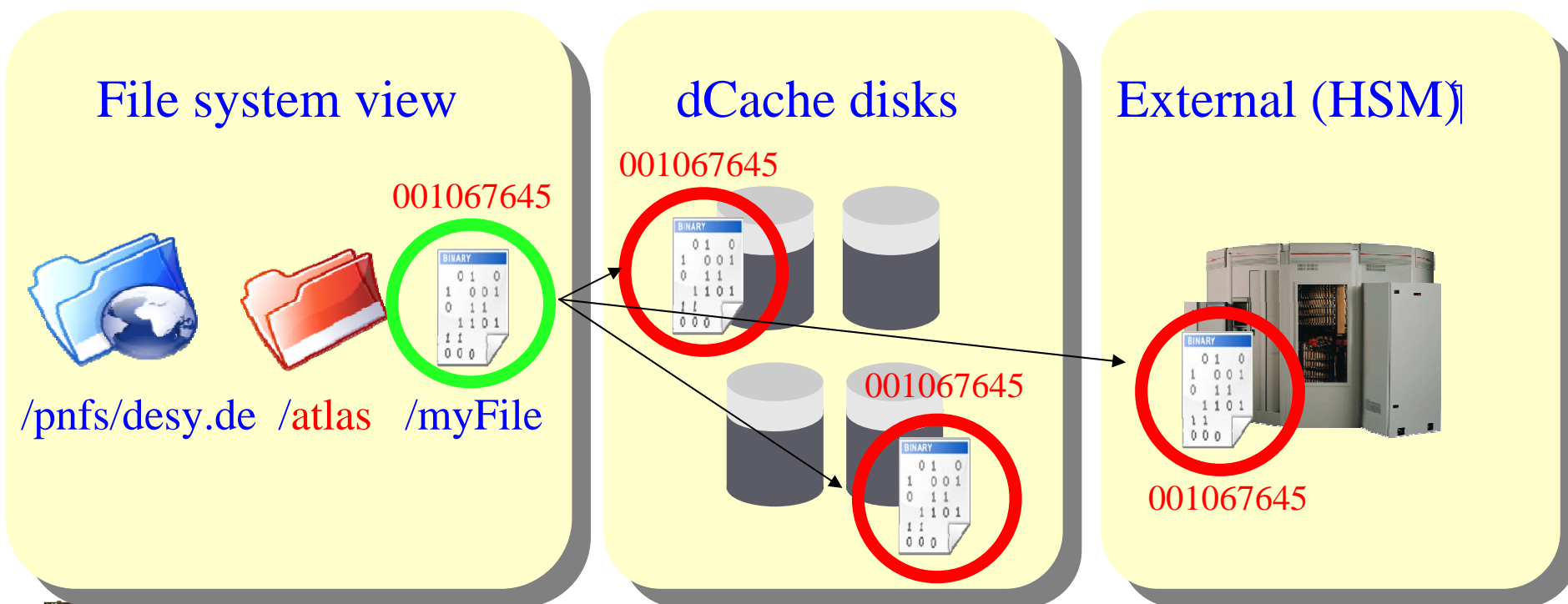
dCache.ORG

dCache.ORG



# dCache in a Nutshell

- ➔ Strict name space and data storage separation, allowing
  - ➔ consistent name space operations (mv, rm, mkdir e.t.c)
  - ➔ consistent access control per directory resp. file
  - ➔ managing multiple internal and external copies of the same file
  - ➔ convenient name space management by nfs



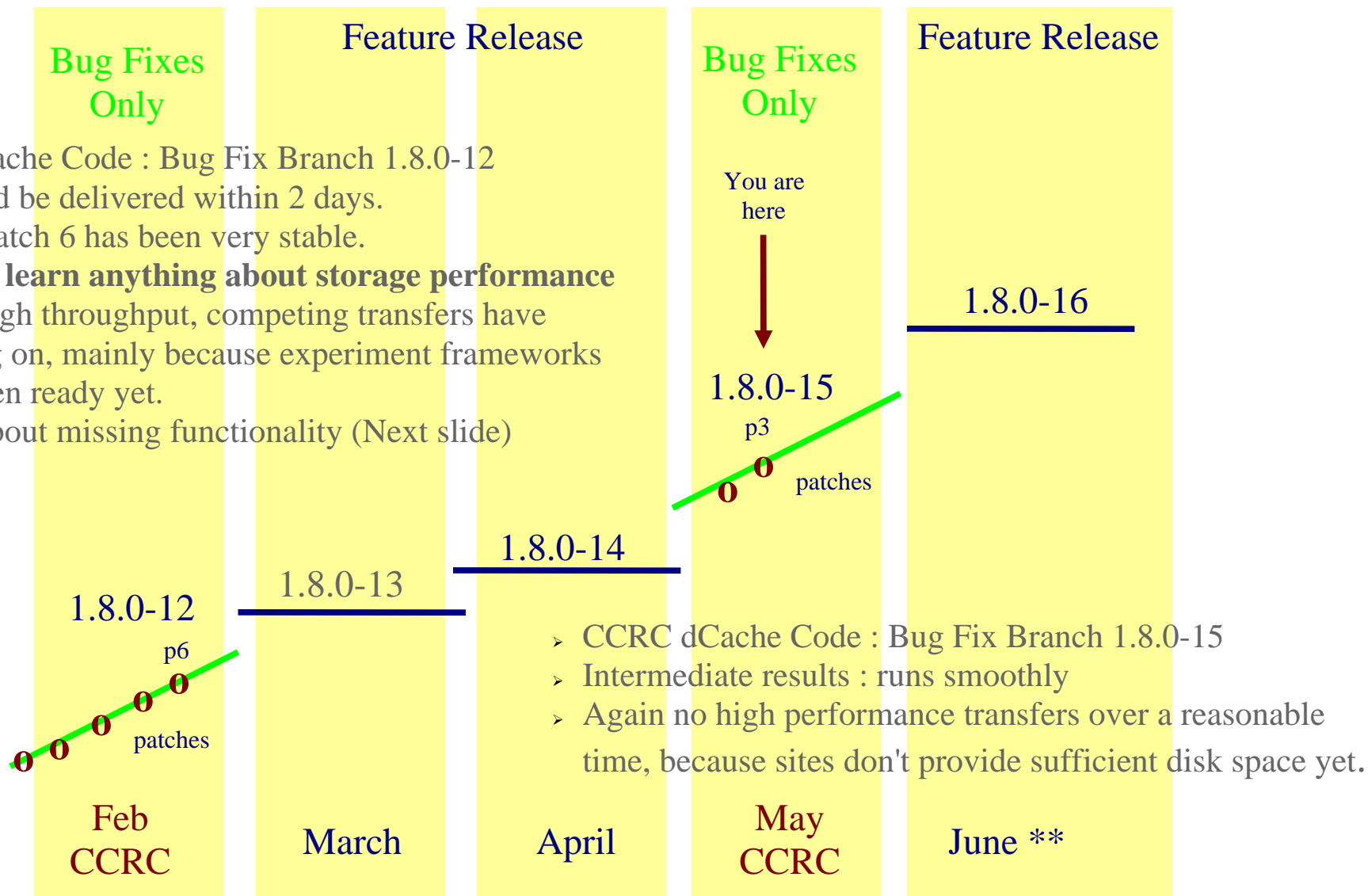


Details : <http://trac.dcache.org/trac.cgi/wiki/manuals/CodeChangeLogs>

dCache.ORG

dCache.ORG

- CCRC dCache Code : Bug Fix Branch 1.8.0-12
- Fixes could be delivered within 2 days.
- 1.8.0-12-patch 6 has been very stable.
- **We didn't learn anything about storage performance** : no real high throughput, competing transfers have been going on, mainly because experiment frameworks haven't been ready yet.
- Learned about missing functionality (Next slide)





The following features are urgently required for LHC production

- Protection of Spaces (ACLs on Space Tokens)
- Full VOMS awareness of all Storage Elements
- Space Tokens are honored for 'read' and 'tape restore'

## Timeline

- May 19, 2008 : Technical agreement among the developers
- May 26, 2008 : Approval by the experiments
- June 2, 2008 : Estimate for implementations
- June 10, 2008 : Presentation of the proposal at the WLCG MB

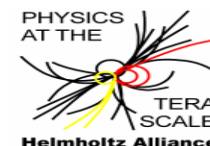


## dCache support workshops

1. dCache support workshop at DESY Hamburg  
Tutorial on installation and configuration (end of Jan.).  
<https://indico.desy.de/conferenceDisplay.py?confid=709>

2. dCache support workshop in Cologne  
Main topic : SRM 2.2 Space Reservation in general and in dCache

Participants : about 30 including  
2 from Italy and 1 from CERN



Funding



*DGI II*

## Results

- More documentation : [www.dCache.org/manuals/workshop-cologne-2008/cologne2008.shtml](http://www.dCache.org/manuals/workshop-cologne-2008/cologne2008.shtml)
- dCache-to-go : Complete dCache in a VM for all platforms
- Recorded talks and e-learning modules by SuGI
- Lot's of discussions and information exchanges.



Follow up : dCache operational workshop Oct, Munich

For development:



Interactive, graphical GridFTP client

- Compatible with dCache
- Developed and tested on dCache Kern-DGrid installation in Jülich
- See: <http://bi.offis.de/gridftp/>
- Interactive presentation: <http://bi.offis.de/gridftp/screens/gridftp.htm/>





- Chimera
  - Included in all 1.8.0 releases
  - Documentation in dCache Wiki
  - Will become default for new installations
  - Still working on accelerating pnfs->chimera conversion.
- New, integrated Information provider
  - Including Space Token publishing.
  - First version will be ready with 1.8.0-16 (mid of June)
- New pool software 1.8.0-17 (mid of July)
  - Fixes for space miscalculation
  - Improved support for xRoot and http (gsi enabled)
  - Needed for NFS 4.1
- Implementation of the addendum of the SRM 2.2 MoU
- Improving the HSM interface mechanism
- Integration of NFS 4.1 (End of 2008)

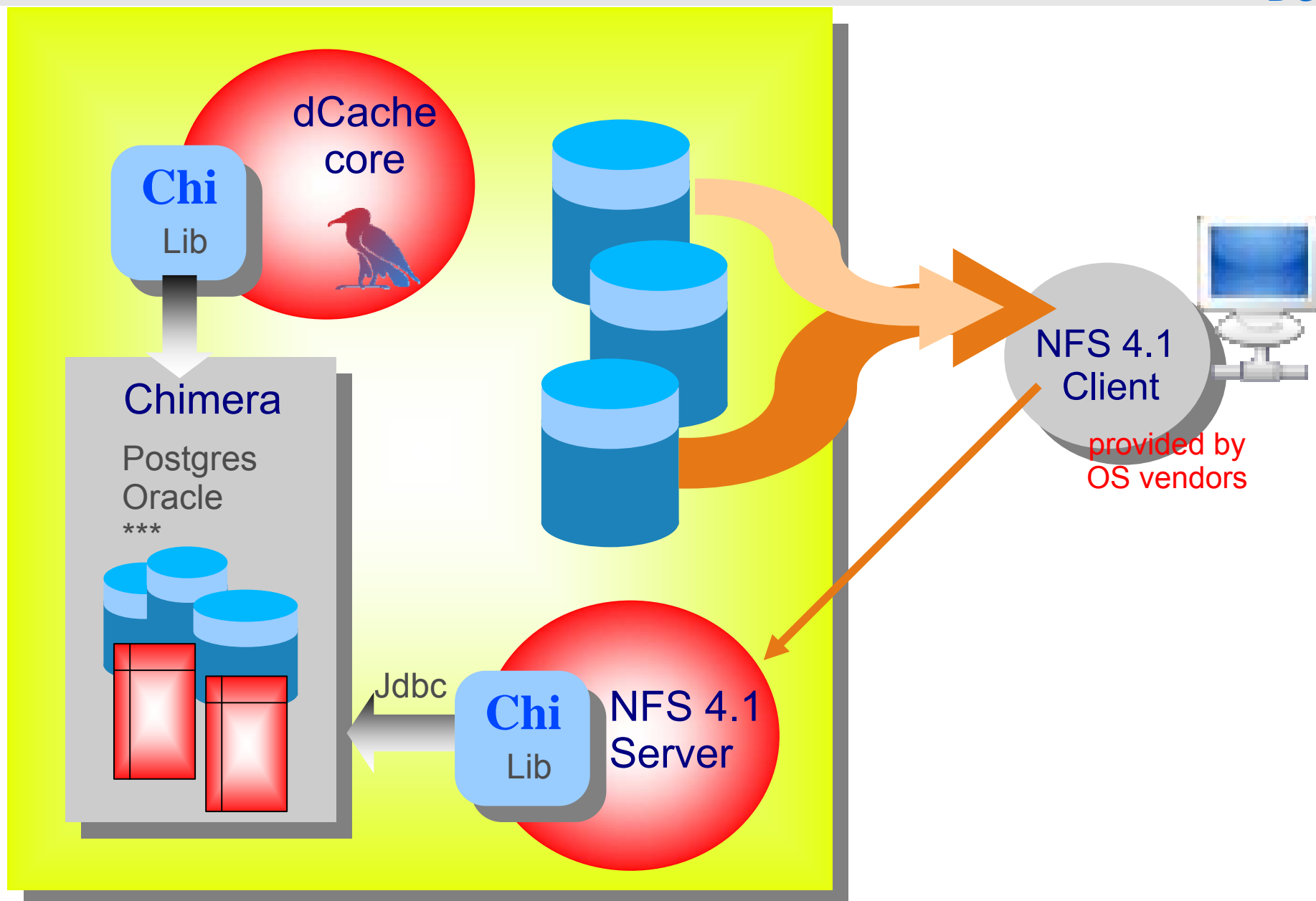
(\*) Partially funded by *DGI II* and *HGF Alliance*



# NFS 4.1 in dCache

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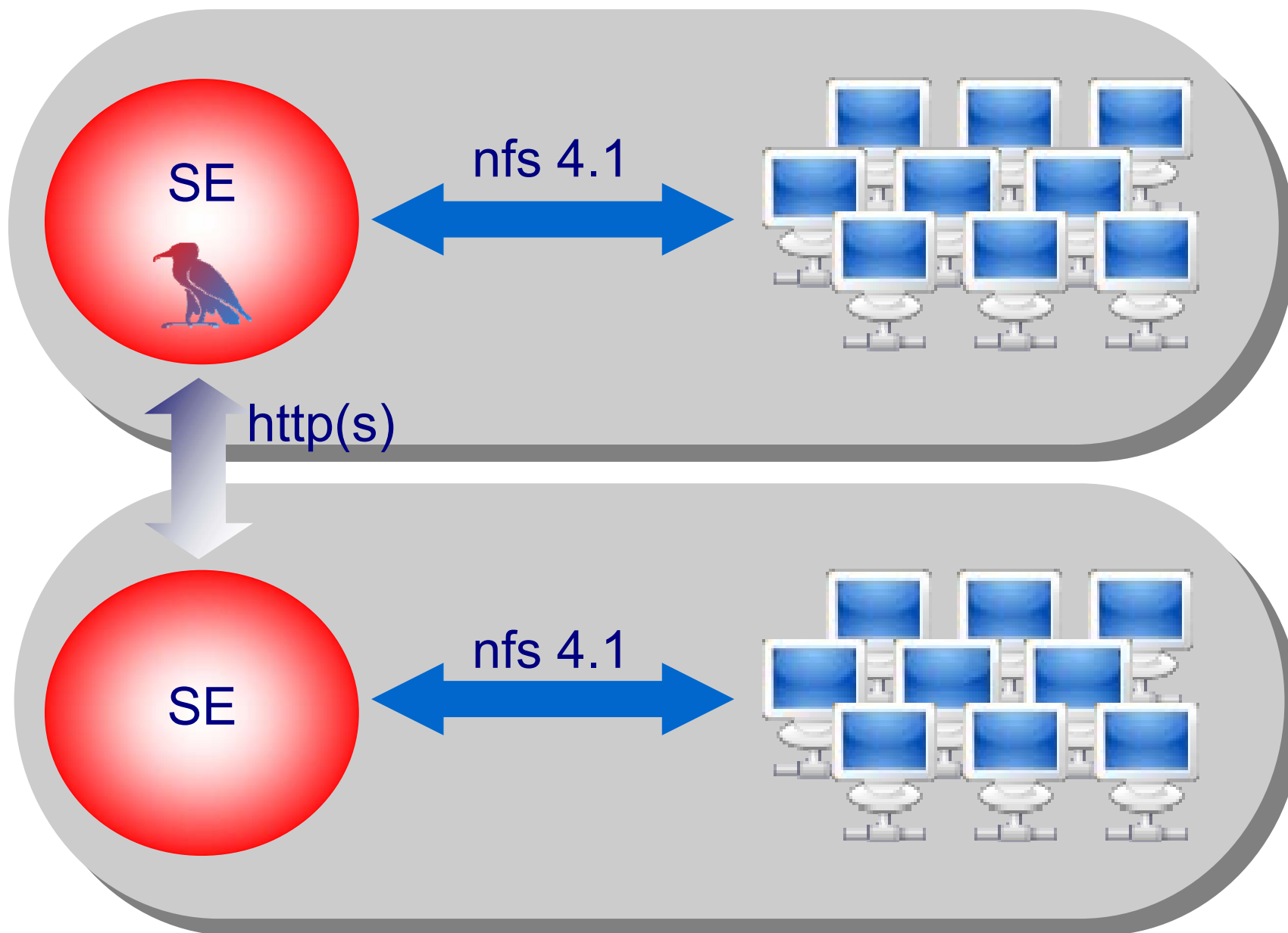




# Goal : Industry standards in HEP ?

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## *Further reading*

*[www.dCache.ORG](http://www.dCache.ORG)*