Storage: Futures

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Focus

- **The focus of this presentation is on Tier-2s**

- **For Tier-1s storage outlook, refer to pre-GDB presentation**
  - http://indico.cern.ch/conferenceDisplay.py?confId=20246

- **The Addendum to the WLCG SRM v2.2 Usage Agreement can be found here:**
    - https://twiki.cern.ch/twiki/pub/LCG/WLCGCommonComputingReadinessChallenges/WLCG_SRMv22_Memo-14.pdf

DPM

- It is used by about 135 sites.

- DPM continues to be the supported gLite light weight storage solution.

- DPM current production release is 1.6.11-3
  - Most sites (59) have upgraded to 1.6.11-3 SLC4
  - About half sites (48) are at 1.6.10-4 SLC4
  - 10 sites still at 1.6.7-1 SLC4

- New information providers:
  - The update will include one RPM with the 1.6.11-4 release-patch number.

DPM forthcoming changes

■ New v1.7 release series in preparation.

■ MoU items which will be addressed in 1.7

- Multiple groups for write control in spaces
- srmRelease files without request token
- srmLs can give information on spaces associated with a file

■ Other changes in 1.7

- Support for srmCopy
- Retain space residency when draining a file from a filesystem
- New information provider - to provide more detailed space information (to be released as a patch for 1.6 as well)

DPM further areas for development

■ Further checksum support

■ Generalise xrootd support

■ Investigate analysis use cases

■ Compliance with the gLite logging recommendations

■ Tool for consistency check and repair

■ File access via NFSv4

■ Quota system

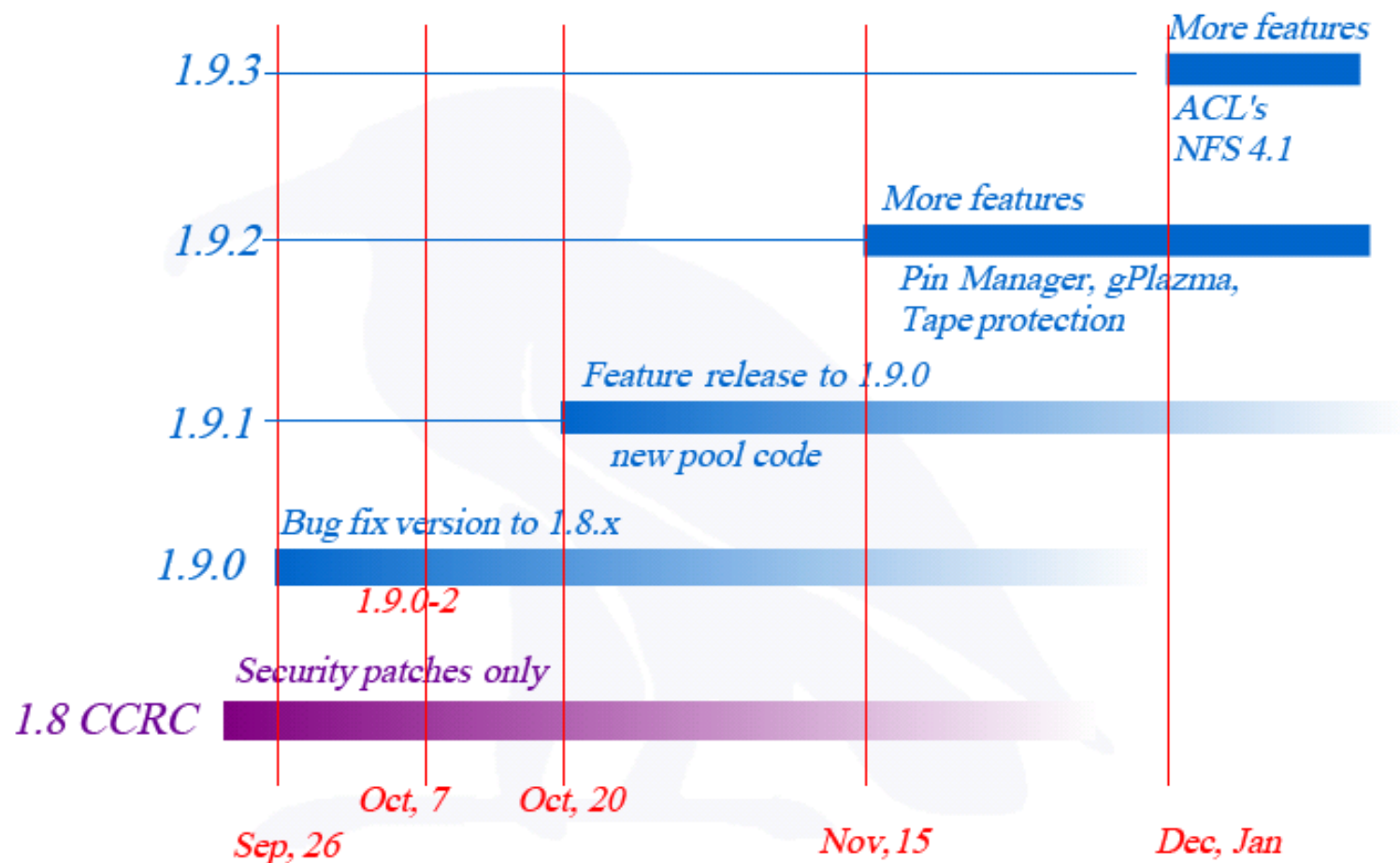■ Enhance filesystem selection

■ Stream and resource limits

dCache outlook

- It is used by about 50 sites.

- The current dCache production version is 1.8.0-15p12.
  - A big variety of installations as of today:
    - About 10 (U.S.) sites at 1.8.0-15 [p3-p8-p11]
    - About 10 sites at 1.8.0-12 [p2-p4-p6-p13]
    - About 5 sites still at 1.7.0 (SRM v1)
   - The rest at generic 1.8.0

dCache release plan

dCache releases

- dCache version 1.9.0
  - Same functionality as 1.8.0 - Only bug fixes (see change log)
- dCache version 1.9.1.
  - New Pool code (default)
    - new design.
    - protects from over-committing disk space (old issue)
    - includes new Copy and Draining Manager
  - Secondary groups for SRM-DELETE (non MoU atlas request)
  - New Information Providers
- dCache version 1.9.2
  - Pins can be released by FQAN (MoU)
  - Tape protection from arbitrary usage (MoU)
  - Space Token deletion protected (MoU)
  - Improved gPlazma
    - DN can be mapped to uid and VO to gid.
- dCache version 1.9.3
  - NFS v4.1 server
 - Full fledged ACLs on namespace
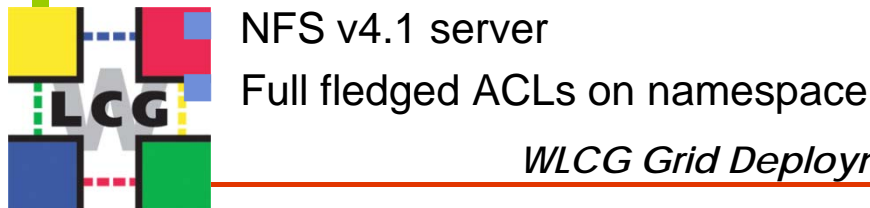
dCache recommendations

- dCache tutorials/sessions will be organized during the upcoming WLCG workshops
  - Recommendations on installation and configuration for Tier-1s
  - Hints for Tier-2s

- A distribution deployment test suite is being prepared for validating an installation before making it available in production

StoRM

- It is used by the Italian Tier-1 and about 20 sites.
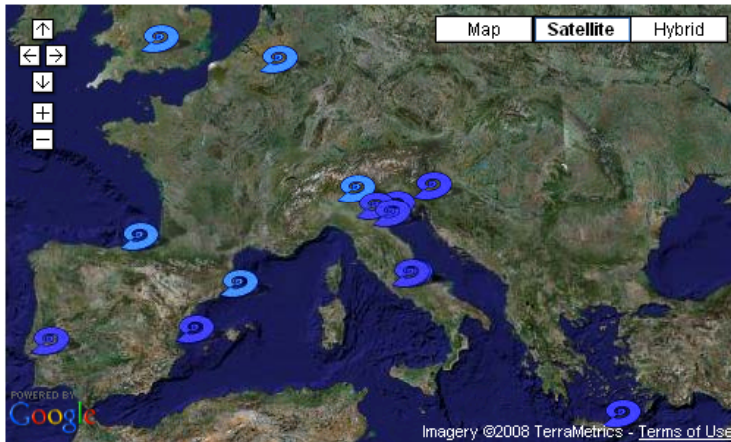
- The current StoRM version is 1.3.20-04.

- StoRM offers an SRM implementation for all POSIX filesystems with ACLs support.
  - GPFS, Lustre, ext3 and xfs

StoRM

- Available file access protocols:
    - File, gsiftp, rfio, root (not well tested)

- StoRM is quite flexible for implementing experiment requirements
    - Through the configuration file (namespace.xml) it is possible to fully define the characteristics of a storage area.
    - Quotas can be enabled to control the usage of the space.

- Detailed information concerning StoRM can be found on the StoRM web site:
    - http://igrelease.forge.cnaf.infn.it/doku.php?id=doc:guides:start
      http://igrelease.forge.cnaf.infn.it/doku.php?id=doc:guides:site-info-variables

StoRM: some recommendations

- GPFS and Lustre are the most supported file systems.

- It is recommended to install StoRM-FE and StoRM-BE+MySQL on different machines.
  - It depends on the load on the SRM server
  - For a modest load it is also OK to have FE+BE+MySQL on one host + gridftp servers on other machines.

- The number of GridFTP servers can be calculated using: #GridFTP servers = Total Throughput in MBs/70MBs

StoRM development plans

- StoRM version 1.4 in production by the end of the year
  - SRM MoU short term agreement.
  - New Information Providers following the recommendations of the "Installed Capacity Working Group".
  - Quotas supported directly in StoRM and not by the underlying filesystems.
    - This allows for support of quotas on more filesystem types.

Thank You