LHC Computing Grid Project - LCG

File Access Proposal to the GDB

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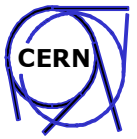

Status

- Shortened version of the document re-distributed
- Small team to discuss implementation options assembled
  - Jean Philippe Baud (overall coordinator)
  - James Casey (WP2)
  - Maria Girone (Pool and Applications)
- Some options identified and discussed
  - PFS – Wisconsin, Douglas Thain
  - SlashGrid – Andy McNab
  - LUFS – Used by Alice (Andreas Peters)

- Work is still on-going to understand the best short-medium term approach but as of today, LUFS seems the favorite medium term solution.

Site Considerations

- The choice should not affect the applications and different solutions at different sites could be possible as long as the only interface is POSIX I/O plus maybe some site specific scripts with known names e.g. GFAMount
- There are no known limitations of any SRM implementations that require modification at this time.
  - GFAL would support version 1.0 and 2.1 but does not require any feature of version 2.1 at least at this stage.
- It is assumed that either rfio or dCap services are present.
- LUFS requires a small kernel module to be installed.

Overall Plan

- Both the PFS and the LUFS solution are largely an equivalent amount of work.
- Estimated Manpower for Prototype:
  - 3-4 weeks of work from Baud, Casey and either (Thain or Peters)
  - Some small work required from others (e.g Girone)
- Detailed design to be finalised this week (Will be published on the GTA web site next week)
- First prototype in June in time for LCG-1.
- First complete version in September.
  - Will include experience of how it is used and bug fixes.

PFS Advantages

- PFS Advantages
  - exists for a few platforms: Linux, Solaris, Irix, DUX.
  - LUFS is linux only (although not difficult to port to Solaris).
  - no modification to kernel
  - easy to debug because entirely in user space
  - mmap is supported
  - messages can be more precise in case one of the components (LRC, SRM, CASTOR, DCAP...) gives messages on stderr or in a user defined buffer.
  - File naming conventions would be unchanged.

PFS Weaknesses

- PFS Weaknesses
  - works only with modules using shared libraries
  - needs modifications to the "Bypass" component when system calls or linker change.
  - no support for large files
  - no support for multi-threaded applications
  - authentication would have to be done for each call (or session), while for LUFS the authentication is done only once when the user issues a lufsmount.