



Status of LHCb migration to SLC4_ia32_gcc34

'ia32': 32-bit compilation also on 64-bit
machines



Working with two distinct datasets



◆ DC06

- Production of large dataset for “physics book” analysis in progress
- Analysis just starting
- Starting point for further developments
 - Simulation, Reconstruction, Calibration+Alignment, Analysis
- ✓ Fully migrated to slc4 ia32 gcc34

◆ DC04

- Large dataset used by all analyses during last two years
- Large analysis effort ongoing
 - PhD analyses to be completed
 - Preparation of DC06 analyses
- × Only available on slc3 ia32 gcc323
 - No plan to migrate
 - would require new release of complete, two year old software stack
 - obsolescent dataset, limited (< 1year) lifetime



DC04 analysis on slc4 at CERN



- ◆ Need to compile user code with `gcc32`, and link with existing `slc3_ia32_gcc323` libraries
 - Without re-releasing two year old compilation and run time environment

- ◆ Proposal: set up a `slc3compat` area in AFS
 - In collaboration with `LCG_AA` and `Atlas`
 - Contains:
 - scripts to e.g. translate `gcc` command to `gcc32 -m32`
 - any necessary symlinks to compatibility libraries
 - Automatically prepended to `PATH` and `LD_LIBRARY_PATH` when setting up user environment for DC04 analysis

- ◆ Work in progress



SLC4, LHCb and the Grid



- ◆ **Ganga/Dirac job submission works from SLC4**
 - Can submit both SLC3 and SLC4 binaries

- ◆ **For official production (DC06 only):**
 - Both SLC4 and SLC3 binaries are installed at production sites
 - Dirac agent chooses binary according to worker node environment

- ◆ **For user analysis**
 - User sends either SLC3 (DC04) or SLC4 (DC06) sandbox
 - Without any control on where it will end up
 - How to ensure SLC3 (SLC4) sandbox executes in SLC3 (SLC4) environment?



Possible solutions



1. DIRAC installs on worker node the compatibility libraries corresponding to the sandbox OS
 - ◆ i.e. SLC3 (SLC4) sandbox executes in SLC3 (SLC4) virtual machine, independent of worker node OS
 - ◆ We have done this for SLC3 binaries on SLC4 machines
 - ◆ Did not test if it works for SLC4 binaries on SLC3 machines
 - ◆ But this where the vast majority of grid resources are found!
 - ◆ We have to provide this if we want users to migrate to SLC4

2. Grid Sites publish SLC version as a resource
 - ◆ DIRAC steers user job to sites advertising the right resource
 - ◆ Clearly easier and more elegant
 - ◆ Can it be implemented?



Conclusions



- ◆ LHCb application software ready for SLC4
 - Migration of DC04 users requires some work

- ◆ Open issues concerning executing SLC4 binaries on the grid
 - How to ensure SLC4 environment on worker nodes?
 - Rate of worker node migration to SLC4