LHCb use cases on the NAF

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Use Cases

Conditions

- *data available on mass storage*
- *availability of LHCb software*
- *customized software & environment on NAF*

Three use cases:

- CPU-intensive
- IO-intensive
- CP fitting & MC production
- data processing

All use-cases performed successfully on the NAF!

Toy MC studies

Job description:

- each job produces toy mc data given input parameters
- data fitted to extract parameters for CP determination
- data discarded and parameters stored in histogram
- performed by few people

Job implementation:

- ROOT based multi-threaded application
- to be effective, many cores needed (100) for short time (few hours)
- small output files stored on Lustre

Data Processing

Job description:

- using customized algorithms
- many iterations due to ongoing developments
- jobs process LHCb data (dst)
- use large datasets: *e.g.* 10 TB for background
- jobs produce (Zoo)ntuple files

Job implementation:

- data imported from Grid
- standard LHCb software applications
- result files copied to home institute
- further analyses done at home institutes
- performed by many people

Small scale MC production

- standard LHCb software
- create small analysis-specific datasets
- physics event generation, detector simulation & track reconstruction
- writes out large files (2 GB) to dCache
- performed rarely, on short timescale for urgent cases