High Energy Physics Computing At OSCER
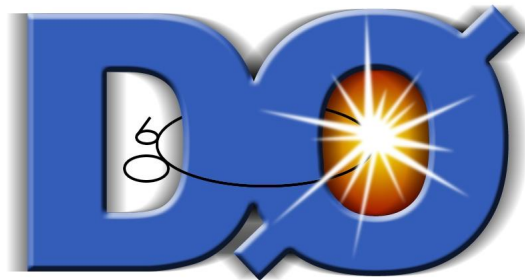
Oklahoma Supercomputing Symposium 2006

Wednesday October 4, 2006

University of Oklahoma, Norman OK

Joel Snow – Langston University

Outline

- Physics computing tasks
- Grid implementation
- OSCER resources
- Grid implementation at OSCER
- HEP @ OSCER Results
- Future plans

Physics Computing tasks

- DZero experiment at FNAL Batavia, IL, US
- ATLAS experiment at CERN, Geneva, CH
- Online data gathering
- Monte Carlo simulations
- Primary data processing
- Data reprocessing
- Physics analysis

Grid Implementation

- Maximize computing resources

- Minimize manpower

- DZero: FNAL SAMGrid – VDT based & SAM

- ATLAS: LCG & OSG software stacks

  - OSG primarily Americas and VDT based

- Interoperable – SAMGrid, LCG, OSG

  - SAMGrid now capable of job forwarding to OSG,LCG – being used at OSCER

OSCER Resources

- Boomer Linux cluster – 540 CPU-GHz

  - 135 nodes, 270 CPU's: Pentium4 Xeon DP "Prestonia", 2.0 GHz, 512KB L2 cache, 2 GB/node

- Topdawg Linux cluster – 3277 CPU-GHz

  - 512 nodes, 1024 CPU's: Pentium4 Xeon EM64T, "Irwindale", 3.2 GHz, 2 MB L2 cache, 4(8) GB/node

- OU Condor Pool – 576 (2250) CPU-GHz

  - 192 (750) CPU's: Pentium4 Xeon; 3 Ghz

  - Student Lab machines - Linux/VMware/Windows

  - Head node (Condor master, gatekeeper) at OSCER

Grid Implementation At OSCER

- Grid3 installation at Boomer cluster
  - ATLAS data challenges
  - Grid3 evolved into Open Science Grid
- SAMGrid installation at Boomer cluster
  - Second site with 2 VO's and single gatekeeper
  - DZero MC and data processing
- ✱ OSG installation at Topdawg – DZero MC
- ✱ OSG installation OU Condor Pool – DZero MC
  - ✱ Use the SAMGrid-OSG forwarding

HEP @ OSCER Results

- DZero Monte Carlo production
  - Boomer: 3.3M events, 219 GB
  - Topdawg: 250K events, 16 GB
  - Condor Pool: 250K events, 18 GB
- DZero data reprocessing
  - Boomer: 16.9M events, 3.2 TB
  - Part of largest HEP grid project (at the time)
- DZero primary data processing
  - Boomer: 22.4M events, 4.1 TB
  - First grid project to process primary data

Future Plans

- DZero Monte Carlo and data processing
  - SAMGrid-OSG forwarding
  - Topdawg and Condor Pool (MC only)
- Expand the Condor Pool
- ATLAS Simulations on Topdawg