IN2P3 Computing Centre Site Report

HEPiX Spring 2007

Loïc Tortay, April 23rd

dapnia
cea
saclay

CENTRE NATIONAL
DE LA RECHERCHE
SCIENTIFIQUE

IN2P3

- IN2P3 is a distributed institute, 22 laboratories and experimental sites spread all over France
- 3500 persons
- One Computing Centre in Lyon
- 70 persons
- CEA DAPNIA Computing Centre as well

CC-IN2P3 1/2

- ~4000 users in ~50 experiments, mostly HEP and astro-particles but also "biology"
- Tier-1/Tier-A for the 4 LHC experiments & BaBar; Tier-0/Tier-1 for several astro-particles experiments: Planck, SNLS, SNFactory, Pierre Auger Observatory, HESS, ...
- Almost 24x7
- Most ressources are mutualised & shared, including: manpower, batch & interactive nodes, ...

CC-IN2P3 2/2

- Dedicated support for a few large or demanding experiments (LHC, D0, BaBar, Planck & astro-particles, biology)
- Often dedicated disk storage, sometimes dedicated interactive, service or DB nodes
- Large Grid team (operation and development for EGEE/LCG and small French Grid projects)

Infrastructure/Building

- Project for a new machine room at the early stage
- Probably delivered around 3Q09

- Major power update almost finished
- Major cooling update still being carried on
- Both while keeping the datacenter online

Batch

- BQS scheduler
- ~900 computing nodes (576 dual Xeon, 330 dual Opteron mostly dual-cores)
- Small parallel cluster with GEth interconnect
- 3.8k jobs running, 11k jobs queued (avg)
- Procurement for new computing nodes (9.35M SpecInt 2000, 400 to 600 nodes)
  - probably dual CPU quad-core (Intel Clovertown LC @2.33 GHz), ~4000 cores

Operating Systems

- Batch running SL3, SL4 for many services
- Migration of computing ressources to SL4 started (interactive nodes and a few workers)
- SL4 64 bit with 32 bit compatibility layer
- Distinct SL4 64 and 32 bit interactive nodes
- New workers will run SL4 directly
- Many services using Solaris, a few using AIX (TSM, most of HPSS)

Storage 1/4

- Old IBM "large" disk units (ESS) being decomissioned
- 2006 main hardware procurements:
  - Sun/STK SL8500 received, replaces 2 STK 9310, "large" configuration with 10k slots and 8 hands, 30 T10000 (Titanium) drives, 10 LTO-4 drives (delivered in June)
  - 47 Sun X4500 (Thumper) delivered, 34 in production, 2 in test for HPSS

Storage 2/4

- HPSS: still running 5.1, 6.2 being tested, got official support from IBM for Titanium drives with 5.1
- dCache: 40 servers (25 X4500), ~300 TB allocated to users, second instance (beside LCG) for EGEE and Phenix (data transfer from BNL). Migration to release 1.7 was difficult due to SRM module problems.
- Xrootd: replaced ~20 disks servers with 8 X4500

Storage 3/4

- AFS: moving to Solaris only servers, backup will remain on AIX (TSM)
- Semi-permanent: "general purpose, neither transient nor permanent disk storage", ~150 TB, based on GPFS (replaces NFS servers)
- TSM: Migration to 5.4 for servers planned, backup service to some remote IN2P3 labs, will use LTO-4 drives when delivered (and tested/validated)

Storage 4/4

- 2007 hardware procurements:
  - 1.2 PB of disk with servers
    - dCache & Xrootd
    - DAS, ~20 TB/server
    - option for 1.6 PB if budget permits
  - 100 TB of disk with servers
    - GPFS
    - SAN, ~25 TB/server

Network 1/2

- 10 Gb dedicated link to CERN
- 2 x 1 Gb to FNAL, used for D0 data transfer and the IGTMD project (EU/US Grid interoperability & massive data transfer)
- 1 Gb link to Renater (French NREN), 2 x 1 Gb before or during summer
- 10 Gb link to GridKa being set up (end of May), used as a backup path to CERN

Network 2/2

- IMAP service (for IN2P3 at large) overhaul, old AIX servers replaced with 6 Linux servers
- Mail delivery to AFS mailboxes will be discontinued during autumn
- Extended security-focused monitoring and logging of in/out traffic due to changes in French law

Questions ?

Thank you.