LAL and GRIF Site Report

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HEPiX, HPC2N, Umea

Hardware Changes

- 2-node Sun cluster with SAS JBODs for internal services
  - 2x SunFire 4100
  - 2x J4400 (24x 1TB SATA disks) instead of planned 1x J4500 (48 SATA disks)
  - Many HW problems due to unsupported HW sold by Sun...
    - Many restrictions coming from SATA disks : SCSI reservations not supported...
  - Evaluating as a potential replacement for HP Alpha/TruCluster
- 3 new Sun X4550 (Thor = Thumper v2) with 1TB disks for grid storage
  - Not yet installed because of infrastructure problems
  - 10 Gb/s uplinks
  - Running as DPM disk servers (Linux SL)

Infrastructure

- Infrastructure is still the main concern :
  - Harmonics in neutral : installation of an active harmonic filter (from Merlin Gerin) done 4 months late...
  - Cooler at half capacity during 2 months in the winter...
    - Capacity reduced by 50% during 2 months
  - Lost power on cooling 2 consecutive nights in March : reached 60°C in computing room because of lacking thermal security
    - Capacity reduced by 40% during 1 ½ month

- Plan to refurbish computing room late...
  - Need to "unify" 2 adjacent computing rooms
  - Last oportunity to do it is this year
    - Ability to move all active equipments in the most recent room

- Budget situation is more and more difficult
  - Most credit sources dedicated to procurements of HW

Central File Server

- Tru64 cluster (2 nodes) still the corner stone of internal resources but completely overloaded
  - File server (NFS, CIFS) + mail server mainly
    - Very robust cluster file system
  - MySQL and web servers moved to dedicated Linux servers
    - Web server documents still served by cluster
  - Heartbeat: not reliable enough for a file server
- Replacement based on a 2-node Sun Cluster
  - Many problems with the initial configuration due to Sun mistakes in proposed/delivered solution
    - Very difficult to find real experts on Sun Cluster in France...
  - Interested by ZFS features but not supported as a global FS
    - Features Tru64-AdvFS-like, with integrated RAID
    - Each node has to NFS-mount other node file systems...
  - Sun Cluster # to 15-years old Tru64/ASE or Heartbeat...
  - First tests showed good NFS perfs : 80 MB/s on a client
  - Going to production next week... 5 months late !

GRIF Status

- Consolidated resources increasing…
  - CPU : 6 MSI2K; disk : 1.5 PB
  - Spread over 6 locations: 6 CE, 6 SE
- GRIFOPN (10 Gb/s private network) a corner stone for the unified view of the site
  - Assessing impact on perfs with Atlas analysis tests
- Still fighting with Torque/MAUI instabilities and scalability but no real impact on users
  - Spent some time to understand what to monitor and decide the appropriate recovery actions in case of problems
- GRIF operating WMS as a national core service
  - Official WMS for ALICE VO
    - 2 redundant machines
  - 4 generic redundant machines supporting #40 VOs
  - Long fight for stability… but successful since 2 months
  - Team of 6 people participating to management

MPI Jobs & Shared Storage

- Increasing number of MPI jobs (LAL)
  - Mainly from non-LHC VOs
  - Peaks at 300+ 4-process jobs
    - 1 user testing highly // jobs : 128 or 256-process jobs
  - No dedicated HW (Infiniband) : need to work on efficiency
    - Private Gb/s between WNs ? Interested by experiences...

- Reached performance limits for NFS-based shared home directories with MPI jobs requiring writable shared areas
  - Does not affect non-MPI jobs as they don't use home directory
  - Considering experimenting with LUSTRE
    - Already running a test instance of LUSTRE for CARRIOCAS project

GRIF Monitoring

- Several problems in last months underlying insufficient GRIF monitoring
  - Mainly relying on SAM in fact
  - E.g. : inability to quickly detect and set offline a WN acting as a black hole
- Originally based on LEMON
  - Too difficult to maintain with limited support from CERN
  - Alarms requiring (expensive) Oracle for the backend
- Replaced 2 months ago by Nagios + NagiosGraph
  - 1 instance GRIF-wide, organized by group of services
  - Configuration done by quattor, based on machines configured
    - Not using the mainstream templates for Nagios, merge in progress
  - Grid services not yet monitored by Nagios
    - Done by SAM (central grid monitoring service)
    - Central/regional testing will be integrated into our local instance
  - NagiosGraph providing historical data

GRIF Internal Tools

- Collaborative tools are critical for the (distributed) technical team

    - 20 persons on 6 sites

    - Not everybody full-time = need for "chaotic" participation

- Started a chat infrastructure based on Jabber

    - Open-source server : openFire

        - Configured by quattor based on GRIF VO membership

        - Plan to configure several chat rooms based on VO groups

    - Many open-source clients for every platform

        - Native client on Mac : Ichat

    - Firewall restrictions : good web-based client

    - Many people still preferring email but reach the limit

        - Some days : 50-100 mails…

        - Not enough interactive : quickly diverge…

- Trac still the master piece for documentation, configuration change tracking…

    - Started to use issue tracker for main actions

OS Changes

- Linux
    - No major change yet... but SL5 knocking at the door
        - Already running a some dedicated SL5 servers (Trac, NFS...)
        - Deploying errata (except for kernel)
    - gLite 3.2 WN (SL5) ready for deployment but need to assess VO readiness
        - 1 test system installed
        - Can be done very quickly thanks to quattor
    - Interactive servers : need to wait for gLite 3.2 UI

- Windows
    - Still a mix of Windows XP and Vista
    - No enthusiasm for Vista migration, not only for good reasons...
        - Laptop users generally happy with Vista new features
    - Trend : wait for Windows v7

Quattor

- The key management tool for ensuring GRIF site consistency and allowing a distributed management
  - One unique configuration database, 700 machines
  - Non-grid machines at LAL and at LLR, including desktops and Xen-based VMs
  - Management of whole GRIF possible from everywhere
- Widened and stronger quattor community
  - Quattor adopted by Morgan&Stanley as the core of their new management infrastructure
    - Already managing 20K machines with quattor
    - Developed a CDB/SCDB alternative : Aquilon and will open-source it
  - 2 workshops/year well attended with new comers
    - Some old contributors left too –(
    - New medium/large sites expressing interest
  - QWG effort more and more successful
    - Seamless integration and easy deployment of gLite
  - GRIF is one major contributor... but several others