Caltech Site Report
Mar. 3 2009

Michael Thomas

Facility Photos

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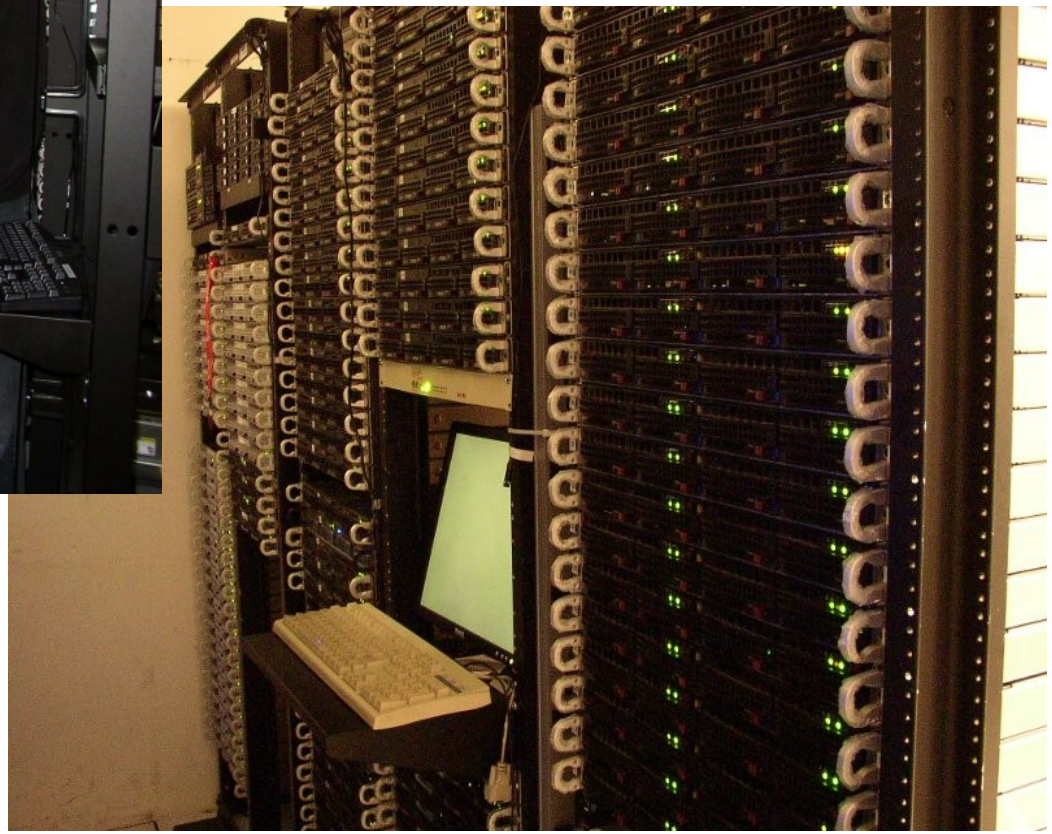


Current Hardware Status

Compute nodes:

- 26 x Opteron 275, 1TB dCache pool
- 35 x Intel 3.0GHz dual-core
- 24 x Intel 2.33GHz quad-core
- 6 x Intel 2.5GHz quad-core
- 458 batch slots, 1120 kSI2k
- +512 batch slots, 1075 kSI2k “RSN”

Storage nodes:

- Pools on all worker nodes (software raid-0)
- Pool sizes vary from 1TB to 3TB
- +2 Sun x4500 Thumpers, 44TB each (Solaris + ZFS)
- +4 2U whitebox disk servers, 8TB each
- +5 4U whitebox disk servers, 16TB each
- 276TB usable space, +208TB “RSN”

Current software status

Most nodes running 64-bit CentOS 4.7 (Rocks 4.2.1)

- Rocks headnode, pnfs server still 32-bit
- Non-cluster services already on RHEL5 (gums, nagios)

OSG 1.0.0

Gums 1.2

PhEDEX 3.1.3

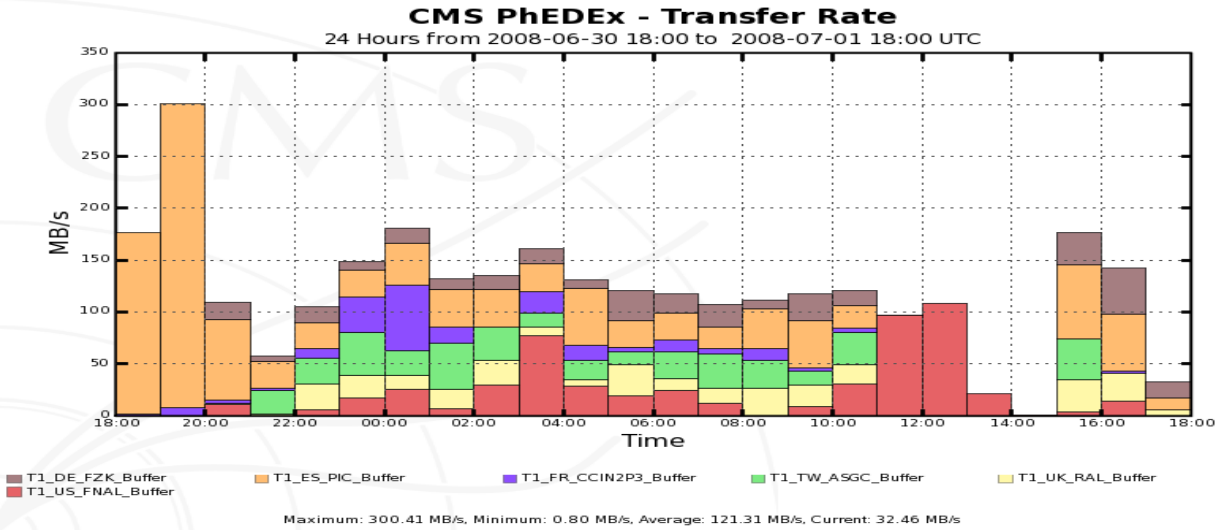
Frontier 4.0rc6

Dcache 1.8.0-12

Public IPs on (almost) all worker nodes

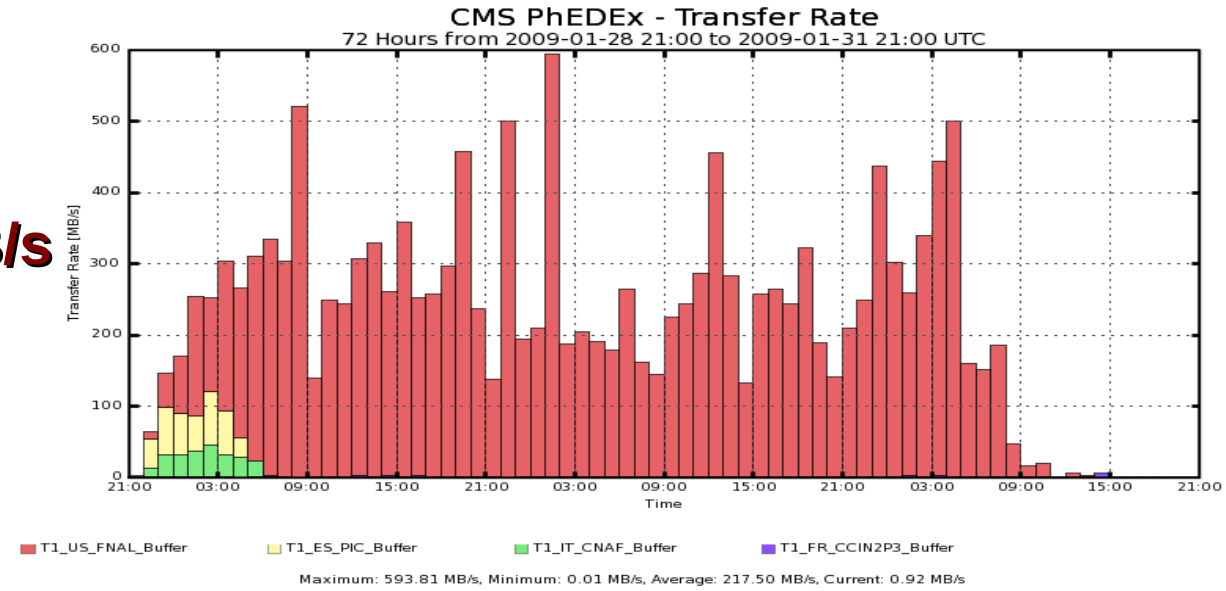
Minimal shared filesystems (NFS == bad)

Performance Plots



PIC @ 300MB/s

FNAL @ 300MB/s



Hardware Plans for '09

Replace older servers

- Opterons go to user analysis cluster
- 5+ year-old Xeons in user analysis cluster go to e-waste
- Purchase 13 new Supermicro Twin to replace # cores
  - +26TB due to larger disks
- Purchase additional disk storage on-demand
  - Individual disks vs. additional servers

CACR facility upgrade

- Expand floor space by removing unused offices/storage space
- Add new cooling equipment
- Increase power capacity
- ...may be delayed due to campus cost reductions

Software Plans for '09

Update cluster to CentOS 5.2 (Rocks 5.1)

- 64-bit on all nodes
- Enable selinux (permissive)
- read-only $OSG-APP on worker nodes
- Fix raid-on-reinstall bug
- Update to Condor 7.2
- Rename workers to reflect physical location
- Fewer public IPs
- Beefier hardware for service nodes
- Pioneer SL5 support
- Backup $OSG-APP nfs server via rsync
- Shorter $OSG_WN_TMP path for madgraph
- Kernel netdump to NFS server
- Update to dCache 1.9.2 (Hadoop)?

More Software plans

HA for gums (via Xen)

Deploy second CE for improved site availability

Improve backup infrastructure

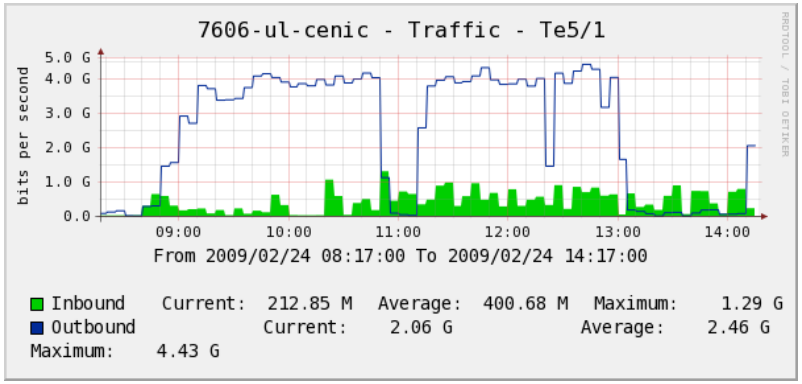
Bugzilla for internal issue tracking

Local UID on workers (under investigation)

Other developments

FDT/dCache

- dcap support added to FDT
- ~4Gbps between FNAL -> CIT



DBS Query Tool

- Help physicists discover new data globally and at specific sites

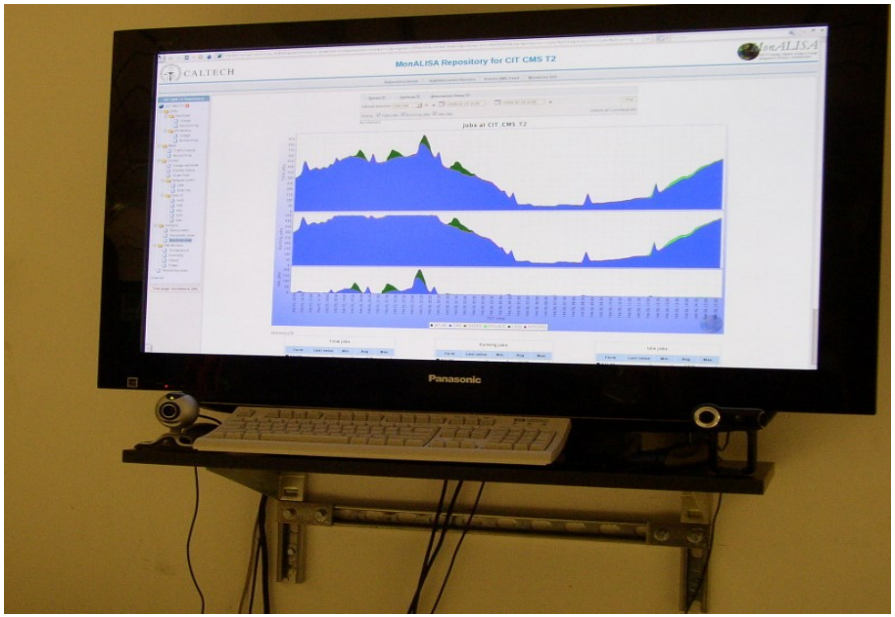
Frog Service

- Web service for generating event display
- CMSSW converts .root to .viz, frog converts .viz to .png

How we do it

Lots of monitoring

- Nagios
- MonALISA
- logwatch



Keep things simple

- No interactive Tier2 use
- Homogeneous architecture
- Only CMS supported (other VOs allowed opportunistic use)

Keep current

- Software updates
- ITB participation

Proactively decommission old hardware

Shenanigans

http://pcbunn.cacr.caltech.edu/Tier2_Shenanigans_2.wmv

http://ultralight.caltech.edu/~dkcira/CaltechT2_Feb2009/