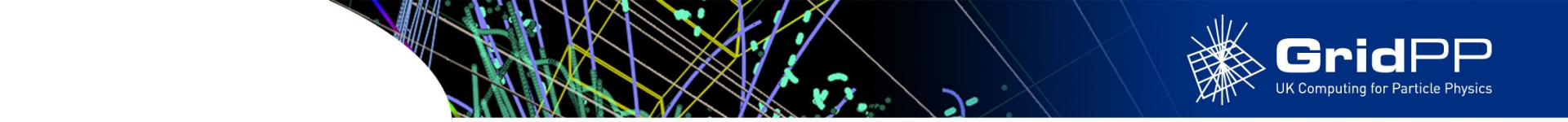


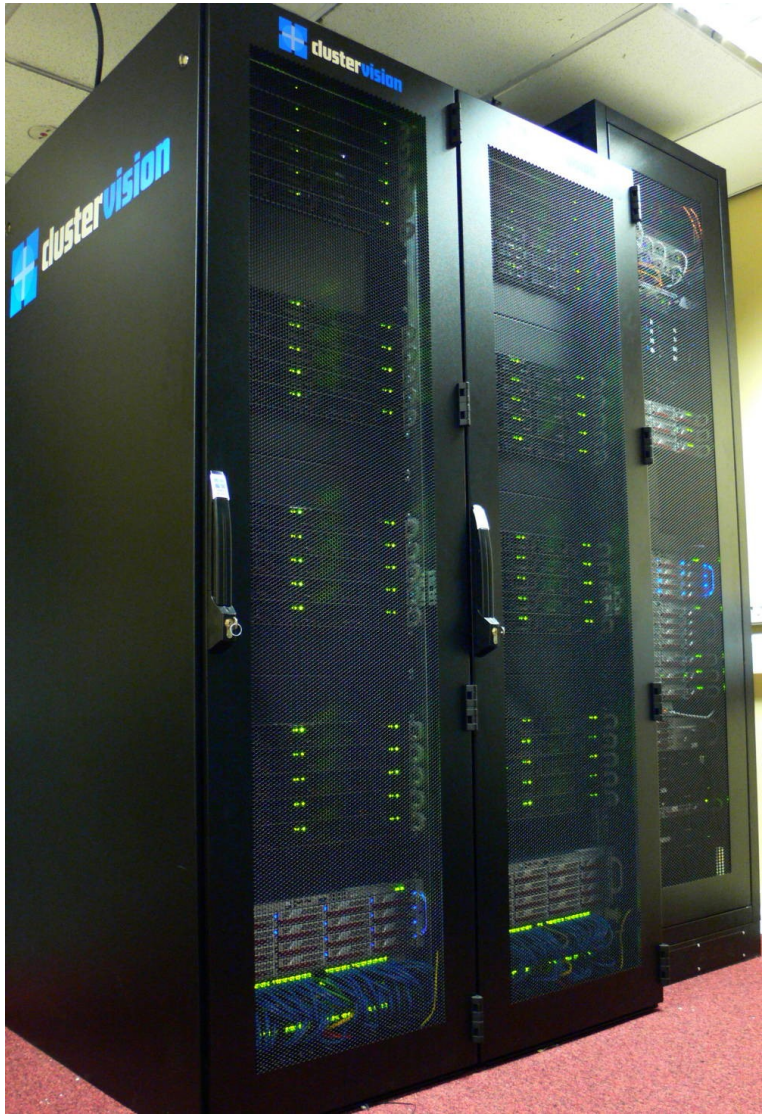
IPPP Grid Cluster

Phil Roffe
David Ambrose-Griffith

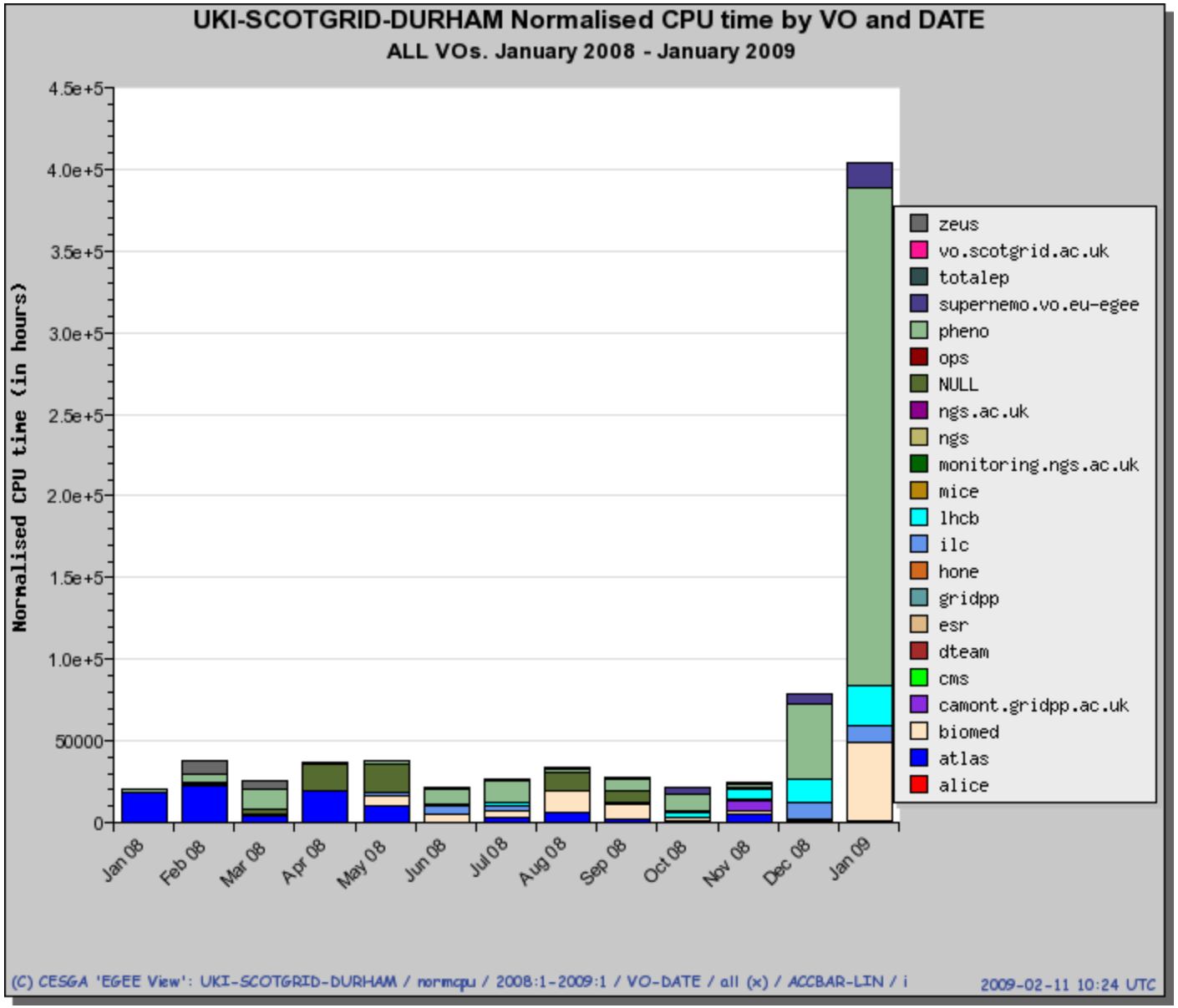
Why Use The Cluster?

GridPP
UK Computing for Particle Physics

- New High Powered Cluster
  - 672 Job Slots (> 1M SpecInt2k)
  - Dual processor, quad core (2.66GHz) providing 8 cores per machine.
  - Low-power Xeon L5430 for greater power efficiency and lower running costs.
  - 16GB RAM per machine, providing 2GB per core.
  - Dual bonded gigabit ethernet
  - 0.5TB Hard Disk
  - Installed with Scientific Linux 4.7 (64 bit)
- Large amount of storage
  29TB currently unused in Durham alone



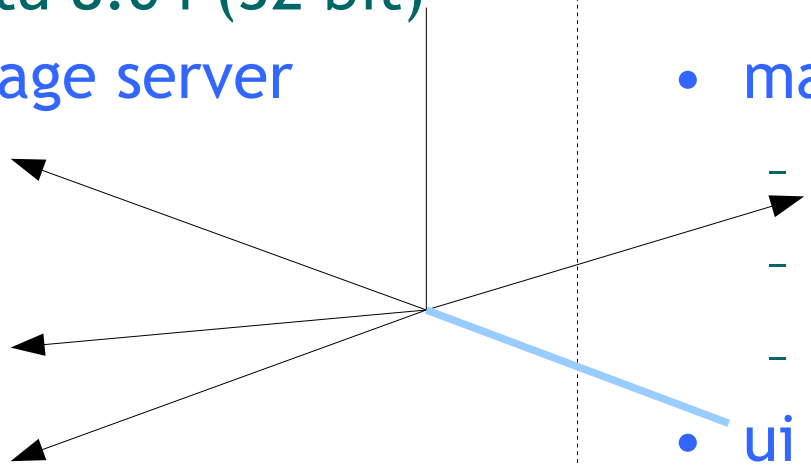
Increased Resources



IPPP and Grid Systems

GridPP
UK Computing for Particle Physics

- IPPP
  - Desktops
    - Ubuntu 8.04 (32 bit)
  - S1 – storage server
    - home
    - mail
    - data1
    - share
    - /usr/local (Ubuntu s/w)



- Grid
  - Nodes
    - SL 4.7 (64 bit)
  - master – storage server
    - data-grid
    - /usr/local (SL s/w)
    - grid s/w area
  - ui

Why can't I qsub?

GridPP
UK Computing for Particle Physics

- Actually, you can
  - Only from /mt/data-grid on the ui
- But...
  - Home directories are not available on the nodes
    - Security reasons (relies on unix file permissions, grid breach opens up wider consequences)
    - Performance reasons – a badly written job can cripple the home file space with potentially >600 simultaneous jobs.
  - Cluster runs a different OS to desktops
    - Code needs to be recompiled for use on different architectures
    - /usr/local is therefore recompiled for SL4 64bit

Job submission

GridPP
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- ssh user@ui.dur.scotgrid.ac.uk - (log in to the UI)
- batch-session-init - converts grid cert, initialise proxy/myproxy
- batch-package-directory - package application to grid storage
- batch-job-submit - creates JDL and submit job(s)
- batch-job-status - check status (running, finished, etc)
- batch-job-get-output - get output (sandbox and grid storage results)

(By default all jobs go to Durham only)

  - Small modification to the submit line to target the whole grid (currently in development)

Demonstration

Future Development

- /mt/data-grid
  - Use for shared local storage (rather than using grid storage)
- WMS
  - Local to Durham
- gsissh support
  - Allows you to log in to the ui as your pheno user in order to prepare your jobs
- Map to local user rather than phenoXXX
  - pheno job could run as ippp user (for file permissions)
- MPI Support
  - For parallel or high mem jobs
- Other Requests? - Please ask

Resources

- https://www.ippp.dur.ac.uk/Intranet/Computing/Grid/basic.html
- /usr/local/gridtools/examples/ on the UI
- http://www.phenogrid.dur.ac.uk/howto/start
- http://projects.hepforge.org/herwig/
- http://www.freacafe.de/grid_sherpa/
- http://www.gridpp.ac.uk/
- http://ca.grid-support.ac.uk/
- http://www.scotgrid.ac.uk/