

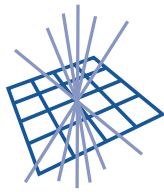
GridPP
UK Computing for Particle Physics

ScotGrid Site Report

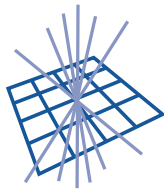
Greig A Cowan

University of Edinburgh

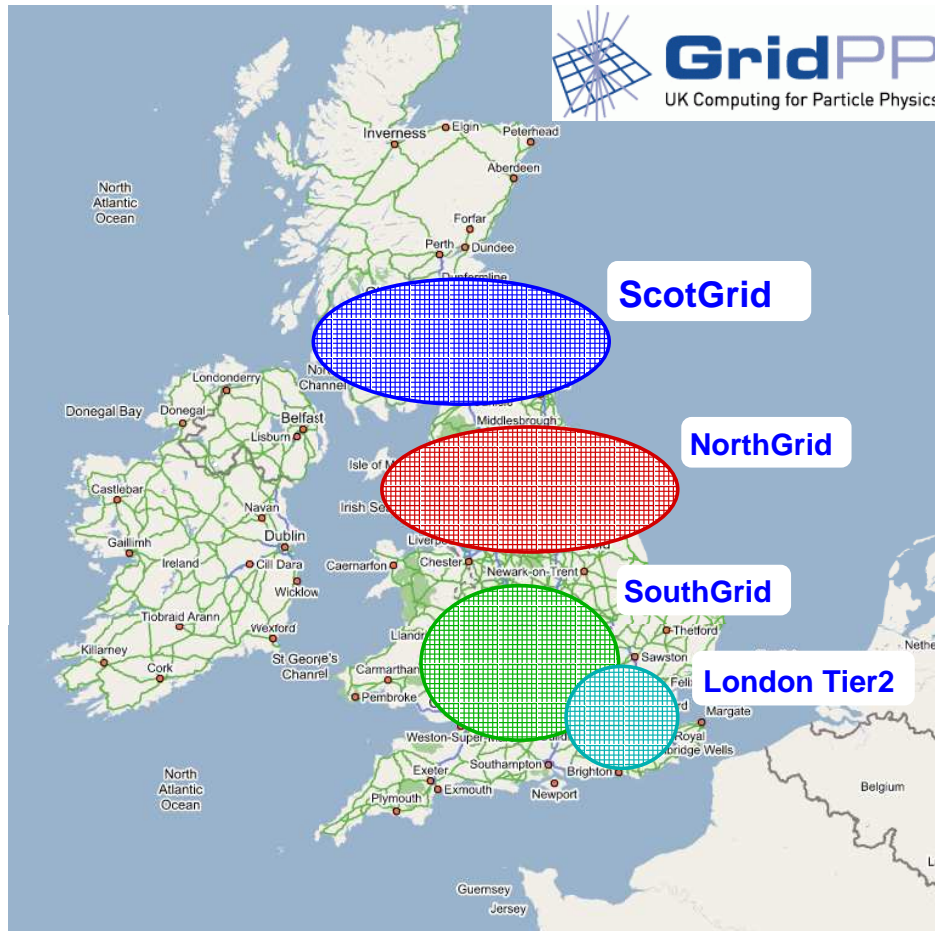




- ScotGrid as a Tier-2
- Institute Overview
- Participation in GridPP Service Challenges
- EGEE Pre-Production Service

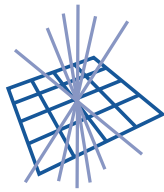


What is ScotGrid?

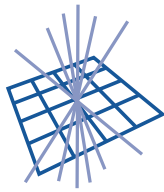


A regional Tier-2 centre composed of:

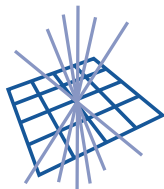
- University of Durham
- University of Edinburgh
- University of Glasgow



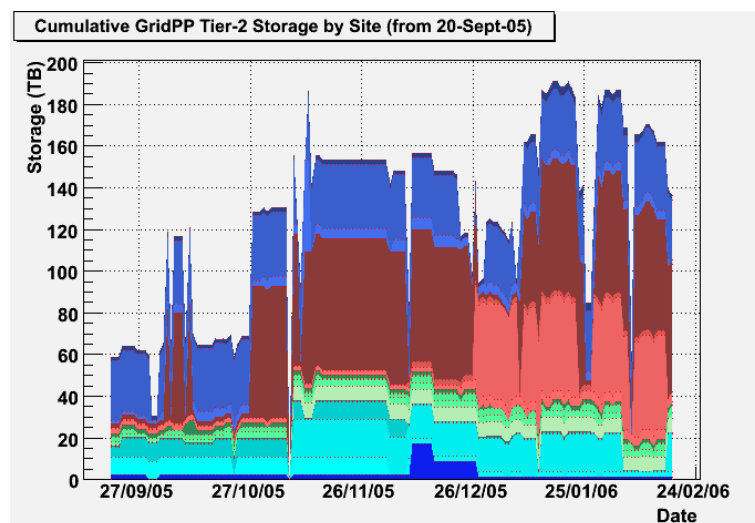
- VOs: atlas, alice, cms, lhcb, dteam, sixt, biomed, zeus, hone . . .
- Network: All sites have 1Gb/s connection to SuperJANET 4.
- Job slots: 220
- Storage:
 - Total of 38TB disk across ScotGrid.
 - Managed by SRM at each site (dCache and DPM).

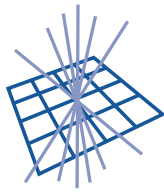


- Department of Physics, the National eScience Centre (NeSC) and the Edinburgh Parallel Computing Centre (EPCC).
- 3 front end nodes, 6 WNs, 3 storage nodes. One is 8 CPU machine which manages a 22TB RAID-5 disk.
- ScotGrid allocated 10TB of SAN, access over NFS. Currently looking at alternative ways of accessing this disk.
- Storage managed by two different middleware apps: dCache and LCG's Disk Pool Manager (DPM).
 - Has allowed us to study the interaction between these two SRM systems.

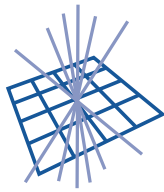


- Development of a storage monitoring framework for use by GridPP.
- Used to assist in the roll out of SRM at every T2 institute in UK.
- Storage data extracted from information published by each SRM via GLUE schema.
- Currently extending to report information on a per-VO basis.

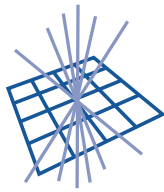




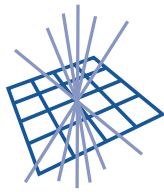
- Physics, Computational Science and bioinformatics users.
- Computationally biased site, with a range of equipment funded from a **variety of sources**:
 - 59 SMP PIII x 1GHz with 2GB memory per node, 5 management nodes and a quad processor system with 5TB disk (SFC).
 - CDF equipment: 10 Intel Xeon SMP CPUs with 1.5GB memory per node and 7.5TB of disk (JIF).
 - Bioinformatics system: 28 IBM blades with dual 2.4GHz Xeon processors and 1.5GB memory and six IBM xSeries 335 dual 2.4GHz with 1.5GB memory (eDIKT).
 - Testbed: 9 2GHz Opteron systems with 1GB RAM which are used for software development and testing (EGEE PPS).



- Current system now up to 4 years old, time to upgrade.
- University funded upgrade of 1.2M Euro. HEP fraction nominally 20% CPU, 80% Storage (of course, we hope for more cycles...).
- Baseline purchase (0.8M Euro):
 - 200 Batch Workers, Dual CPU, Dual Core 2GHz Opterons
 - 100TB Storage
 - 1Gb Ethernet
 - PAT Capable switch for high performance networking for WNs, Fibre uplinks, 10Gb capable.
- Some interest from vendors in Grid architecture and integrating vendor management tools.

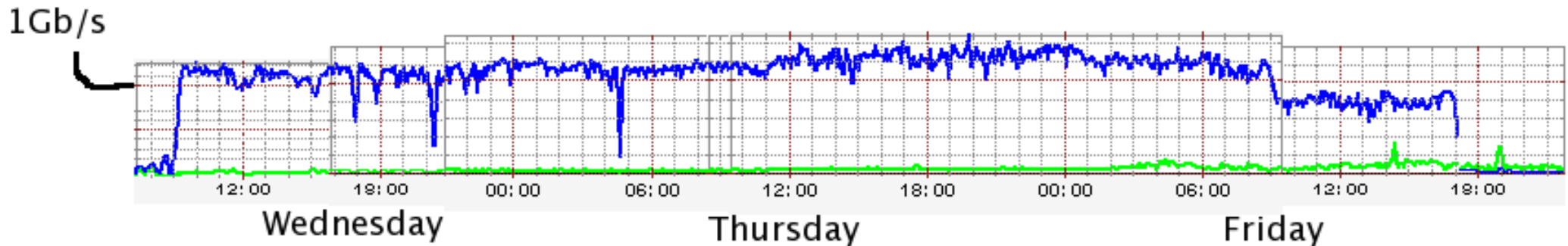


- 53 node farm - dual-2.2GHz Pentium 4, 2GB RAM and \geq 40GB local disk.
- Addition of Durham has shown ScotGrid's ability to add new sites and resources without degrading service for our existing users.
- We have also gained new communities in the form of theoretical particle and astrophysics groups.

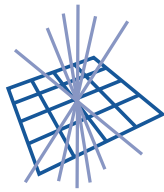


- Storage support at Edinburgh enabled SRM rollout at all UK T2 sites.
- Data management support at Glasgow coordinated tests between T1-T2, T2-T2.
- Sustained transfer of data at 1Gb/s from the T1 at RAL (dCache) to multiple T2s (dCache + DPM) during challenges.

48 Hour Aggregate Test from RAL to Tier2s over SJ4 and UKLIGHT



- ScotGrid joined PPS in November 2005 offering FTS service (UKI-ScotGrid-Gla-PPS).
- Restructuring of PPS in March 2006, upgraded to full site:
 - LCG CE
 - DPM SE
 - MON + LFC Local
 - 3 WNs (planned to expand)
 - FTS Service + ATLAS VO Box
- As well as providing general PPS site for all VOs working with ATLAS DDM team to provide a functionality testbed for Don Quixote 2.



- ScotGrid is a fully operational distributed Tier-2 centre.
- Balance of both storage and computational hardware, funded from a variety of sources.
- Provides services for LCG as well as support for GridPP community.
- Example of this is the work done during GridPP service challenges and the PPS.