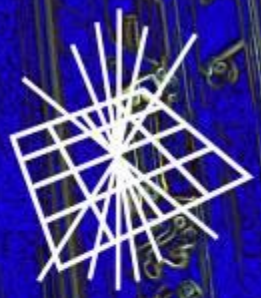


GridPP

UK Computing for Particle Physics

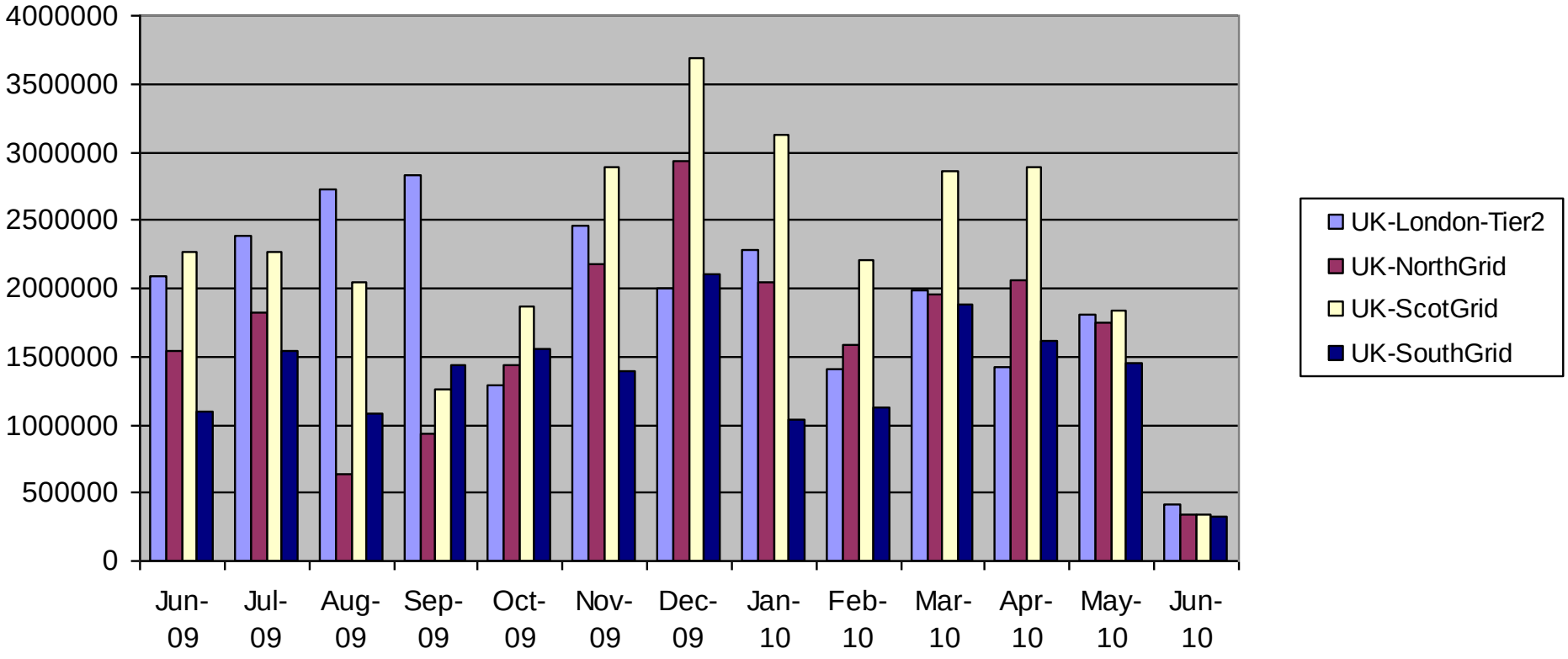
UKI-SouthGrid Overview and Oxford Status Report

Pete Gronbech
SouthGrid Technical Coordinator

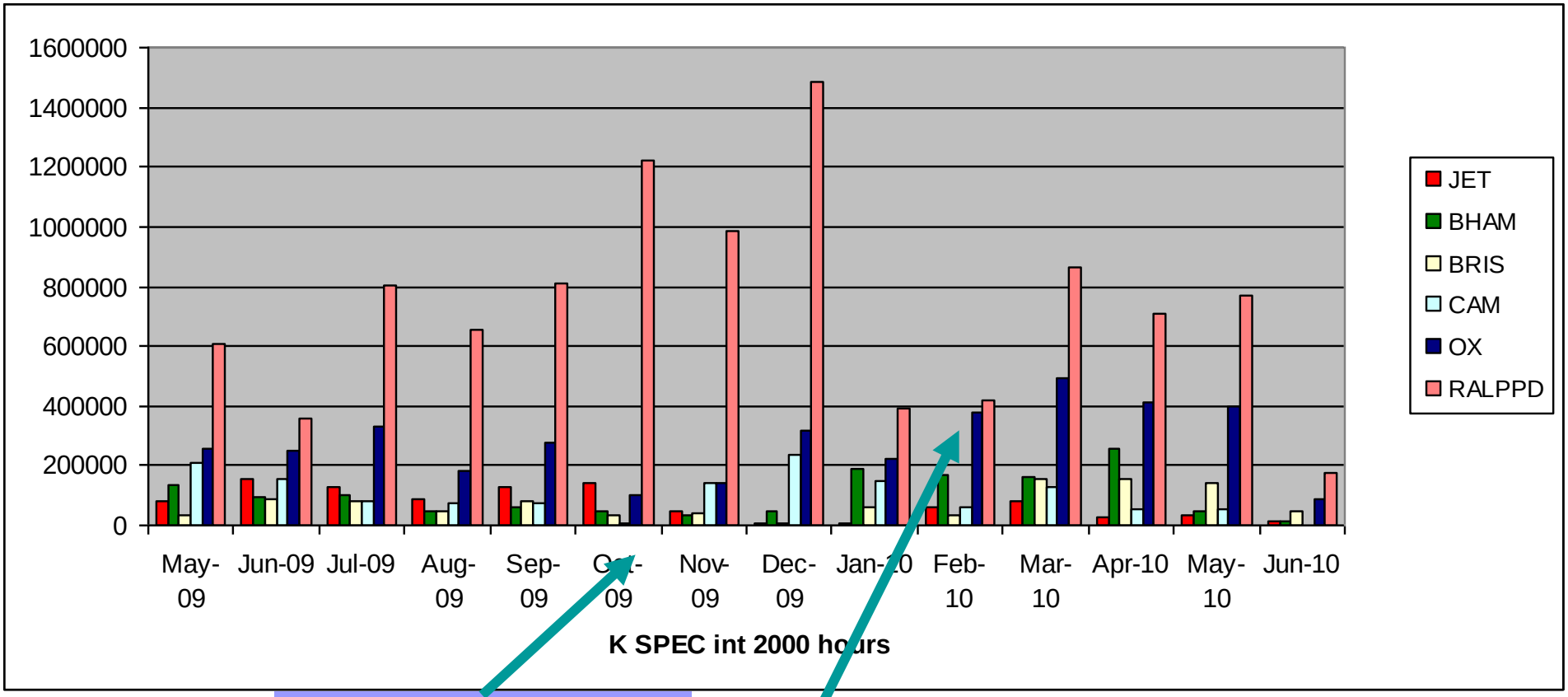
HEPSYSMAN – RAL

10th June 2010

UK Tier 2 reported CPU – Historical View to present



SouthGrid Sites Accounting as reported by APEL



Sites Upgrading to SL5 and recalibration of published SI2K values

RALPP seem low, even after my compensation for publishing 1000 instead of 2500

Region	Site	Phy. CPU	Log. CPU	KSI2K	Availability	Reliability	Unknown	Availability History Jan-10	Feb-10	Mar-10
UKI (UK and Ireland)										
	EFDA-JET	254	254	412	97 %	97 %	0 %	97 %	94 %	79 %
	RAL-LCG2	1,004	4,304	4,304	98 %	99 %	0 %	76 %	93 %	100 %
	UKI-LT2-Brunel	211	593	1,158	99 %	99 %	0 %	97 %	95 %	98 %
	UKI-LT2-IC-HEP	266	1,064	2,128	92 %	92 %	0 %	98 %	83 %	94 %
	UKI-LT2-QMUL	800	1,632	1,632	81 %	81 %	1 %	87 %	87 %	94 %
	UKI-LT2-RHUL									
UK-SouthGrid (UK, SouthGrid)										
	EFDA-JET	254	254	N/A	91 %	91 %	6 %	98 %	83 %	96 %
	UKI-SOUTHGRID-BHAM-HEP	72	384	N/A	69 %	69 %	0 %	93 %	95 %	95 %
	UKI-SOUTHGRID-BRIS-HEP	80	228	N/A	84 %	84 %	1 %	0 %	97 %	88 %
	UKI-SOUTHGRID-CAM-HEP	55	220	N/A	99 %	99 %	1 %	86 %	100 %	82 %
	UKI-SOUTHGRID-OX-HEP	110	440	57,750	95 %	95 %	1 %	97 %	98 %	80 %
	UKI-SOUTHGRID-RALPP	460	1,544	N/A	98 %	86 %	3 %	69 %	86 %	96 %
	UKI-SOUTHGRID-GLASGOW	618	1,912	3,897	93 %	95 %	33 %	98 %	99 %	98 %
	UKI-SOUTHGRID-BHAM-HEP	73	392	861	90 %	90 %	0 %	96 %	84 %	82 %
	UKI-SOUTHGRID-BRIS-HEP	80	228	480	76 %	76 %	2 %	95 %	0 %	65 %
	UKI-SOUTHGRID-CAM-HEP	49	196	395	84 %	84 %	0 %	99 %	77 %	98 %
	UKI-SOUTHGRID-OX-HEP	110	440	943	84 %	84 %	0 %	58 %	93 %	96 %
	UKI-SOUTHGRID-RALPP	460	1,544	3,860	97 %	97 %	0 %	64 %	74 %	97 %
	cpDIASie	1	1	1	97 %	97 %	0 %	90 %	85 %	66 %
	csTCDie	202	858	1,802	92 %	94 %	0 %	96 %	94 %	91 %
	giNUIMie	2	2	2	99 %	99 %	0 %	99 %	98 %	80 %
	mpUCDie	1	1	1	96 %	96 %	0 %	98 %	96 %	88 %

Site Resources at Q409

Site	HEPSPEC06	CPU (kSI2K) converted from HEPSPEC06 benchmarks	Storage (TB)
EDFA-JET	1772	442	1.5
Birmingham	3344	836	114
Bristol	1836	459	110
Cambridge	1772	443	140
Oxford	3332	833	160
RALPPD	12928	3232	633
	0		
Totals	24984	6246	1158.5

Resources at Q110

GridPP
UK Computing for Particle Physics

Current Resources Available

	Non LCG			GridPP		Total Available		Promised (GridPP MoU)					
Site	CPU (kSI2K)	Storage (TB)	HEPSPEC06	CPU (kSI2K) converted from HEPSPEC06 benchmarks	Storage (TB)	CPU (kSI2K)	Storage (TB)	CPU (HS06)	Storage (TB)	% of MoU CPU	% of MoU Disk	% CPU of Tier-2	% Storage of Tier-2
EDFA-JET			1772	443	1.5	443	1.5	0	0			7.09%	0.13%
Birmingham			3344	836	114	836	114	1450	179	230.62%	63.69%	13.38%	10.19%
Bristol			1836	459	110	459	110	661	22	277.76%	500.00%	7.35%	9.83%
Cambridge			1772	443	100	443	100	1148	108	154.36%	92.59%	7.09%	8.94%
Oxford			3332	833	160	833	160	2034	203	163.82%	78.82%	13.34%	14.30%
RALPPD			12928	3232	633	3232	633	6499	364	198.92%	173.90%	51.75%	56.59%
			0										
Totals	0	0	24984	6246	1118.5	6246	1118.5	11792	876	211.87%	127.68%	100.00%	100.00%

New April 1st MoU figures from 2nd trance gridpp3 h/w spreadsheet
Sites not had time to spend it yet, as only released on 1st April

	Previous DISK MoU based on 1st round gridpp3 h/w money for 2010 TB
Birmingham	116
Bristol	55
Cambridge	73
Oxford	124
RALPPD	532

	CPU hours (HEPSPEC06 from above table *4)			
Site	Jan-10	Feb-10	Mar-10	Total
EDFA-JET	32452	245540	332804	610796
Birmingham	749344	683532	638520	2071396
Bristol	246968	122640	524316	893924
Cambridge	585533	231152	520856	1337541
Oxford	882756	1519876	1961224	4363856
RALPPD	1578710	1686160	3466280	6731150

Gridpp3 h/w generated MoU for 2010,11,12

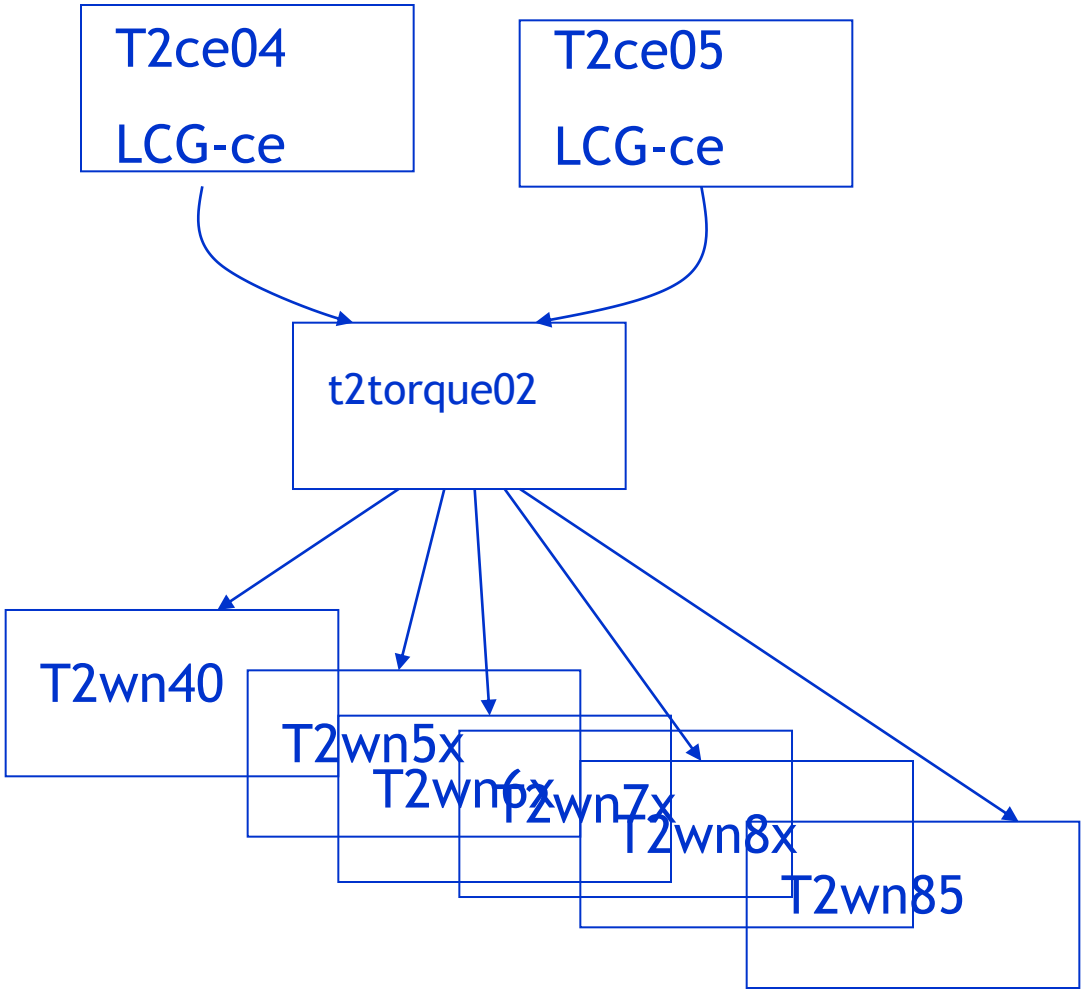
	2010 TB	2011 TB	2012 TB
bham	179	95	124
bris	22	27	35
cam	108	135	174
ox	203	255	328
RALPPD	364	440	583
	2010 HS06	**2011 HS06**	**2012 HS06**
bham	1450	2,119	2724
bris	661	1,173	1429
cam	1148	1,445	1738
ox	2034	2,483	2974
RALPPD	6499	13109	16515

Oxford

- Preparing tender to purchase h/w with the 2nd tranche of gridpp3 money
- ATLAS pool accounts on the DPM problem, worked for some not for others. Increased the number fixed it.
- Ewan working on KVM and iSCSI for VMs. SL5 has Virt IO support as both host and guest. Shared storage will give us VMware style live migration for free. No VMware tools hassle.

Oxford

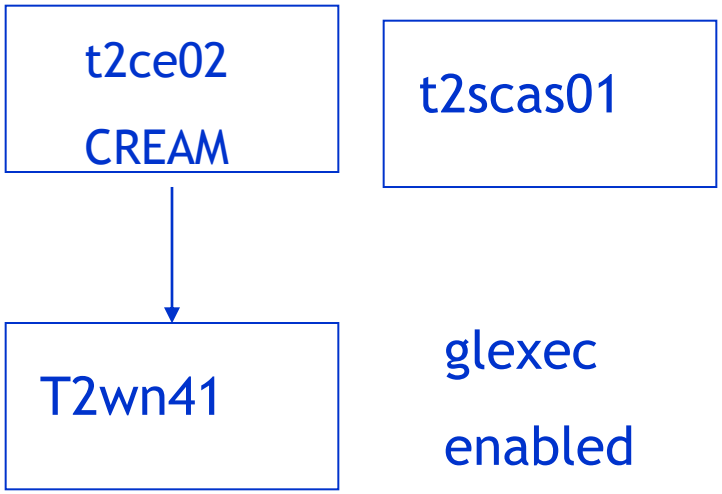
Grid Cluster setup SL5 Worker Nodes

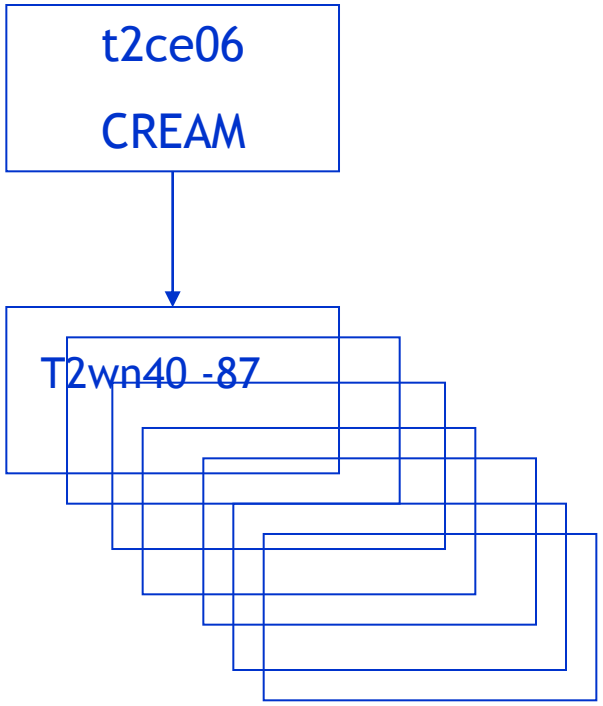


Glite 3.2 SL5

Oxford

Grid Cluster setup
CREAM ce & pilot setup



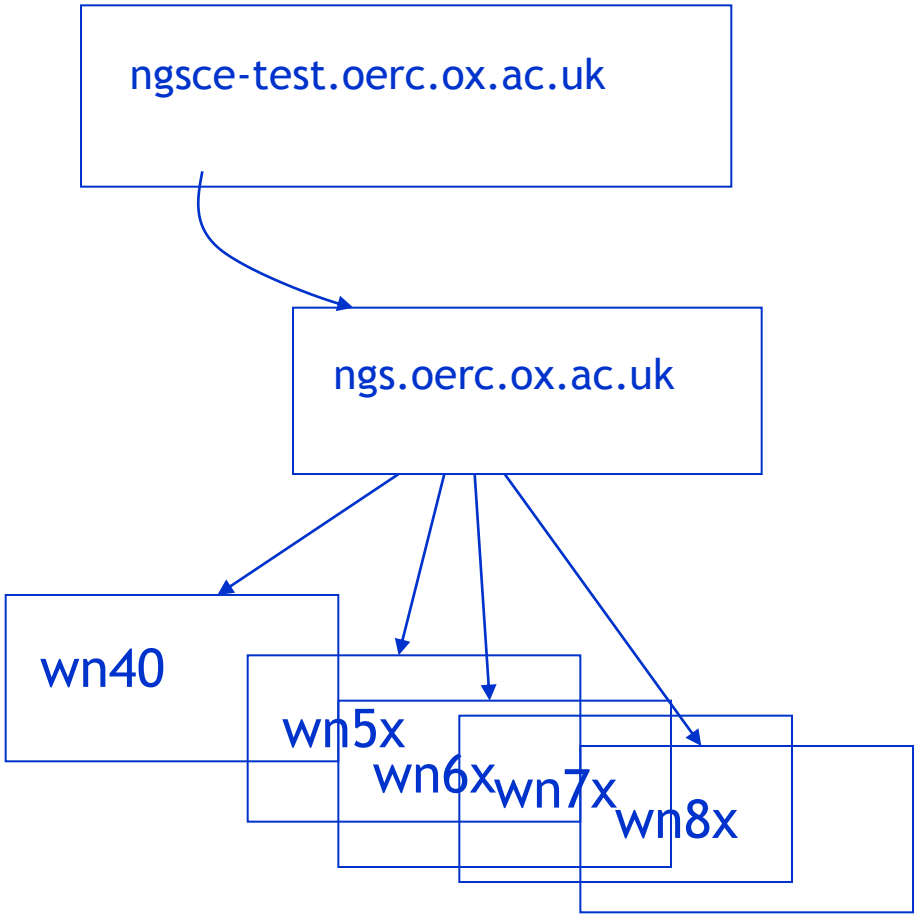


Glite 3.2 SL5

Glite 3.2 SL5

Oxford

Grid Cluster setup
NGS integration setup



ngsce-test is a Virtual Machine which has glite ce software installed.

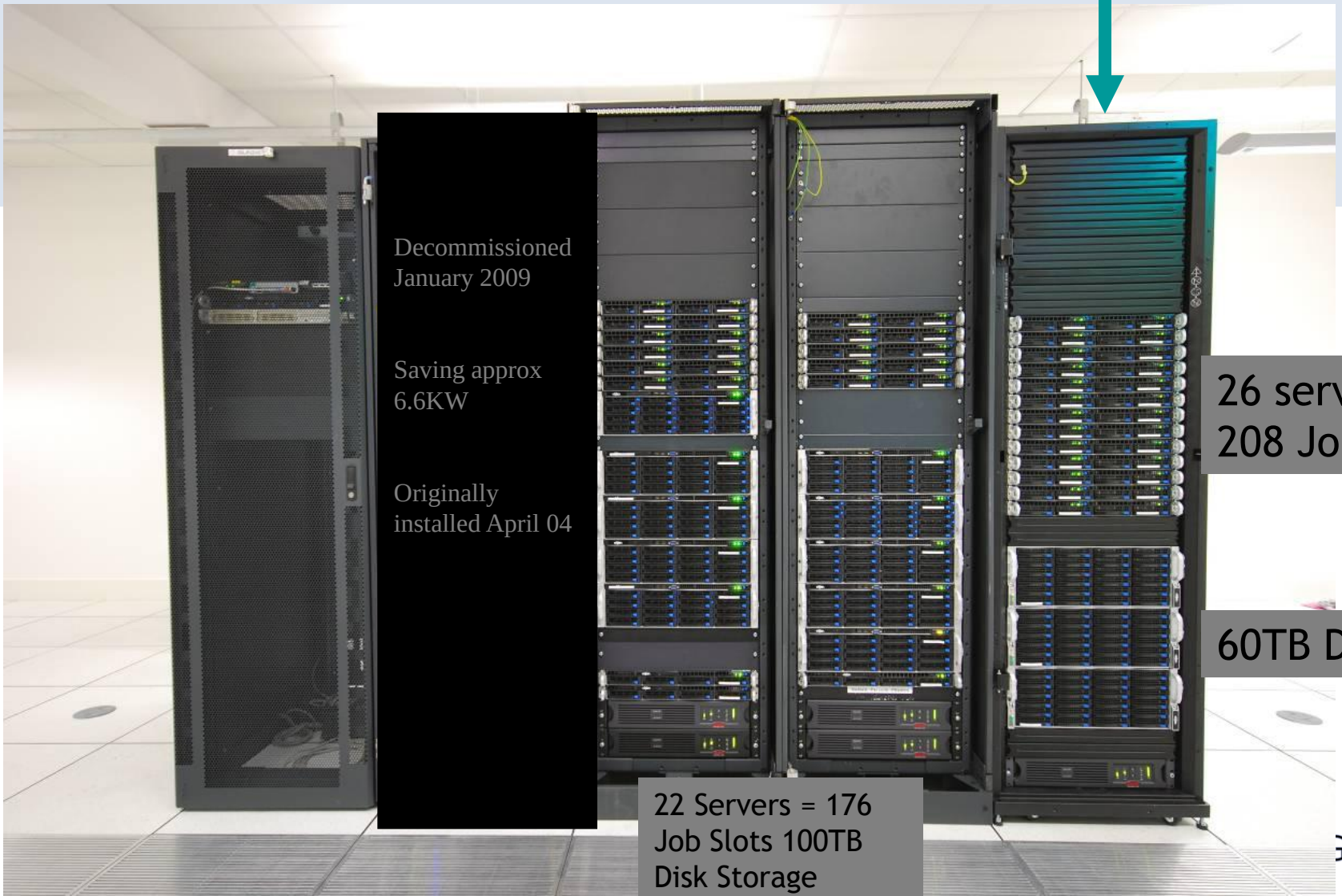
The glite WN software is installed via a tar ball in an NFS shared area visible to all the WN's.

PBSpro logs are rsync'ed to ngsce-test to allow the APEL accounting to match which PBS jobs were grid jobs.

Contributed 1.2% of Oxfords total work during Q1

Oxford Tier-2 Cluster – Jan 2009

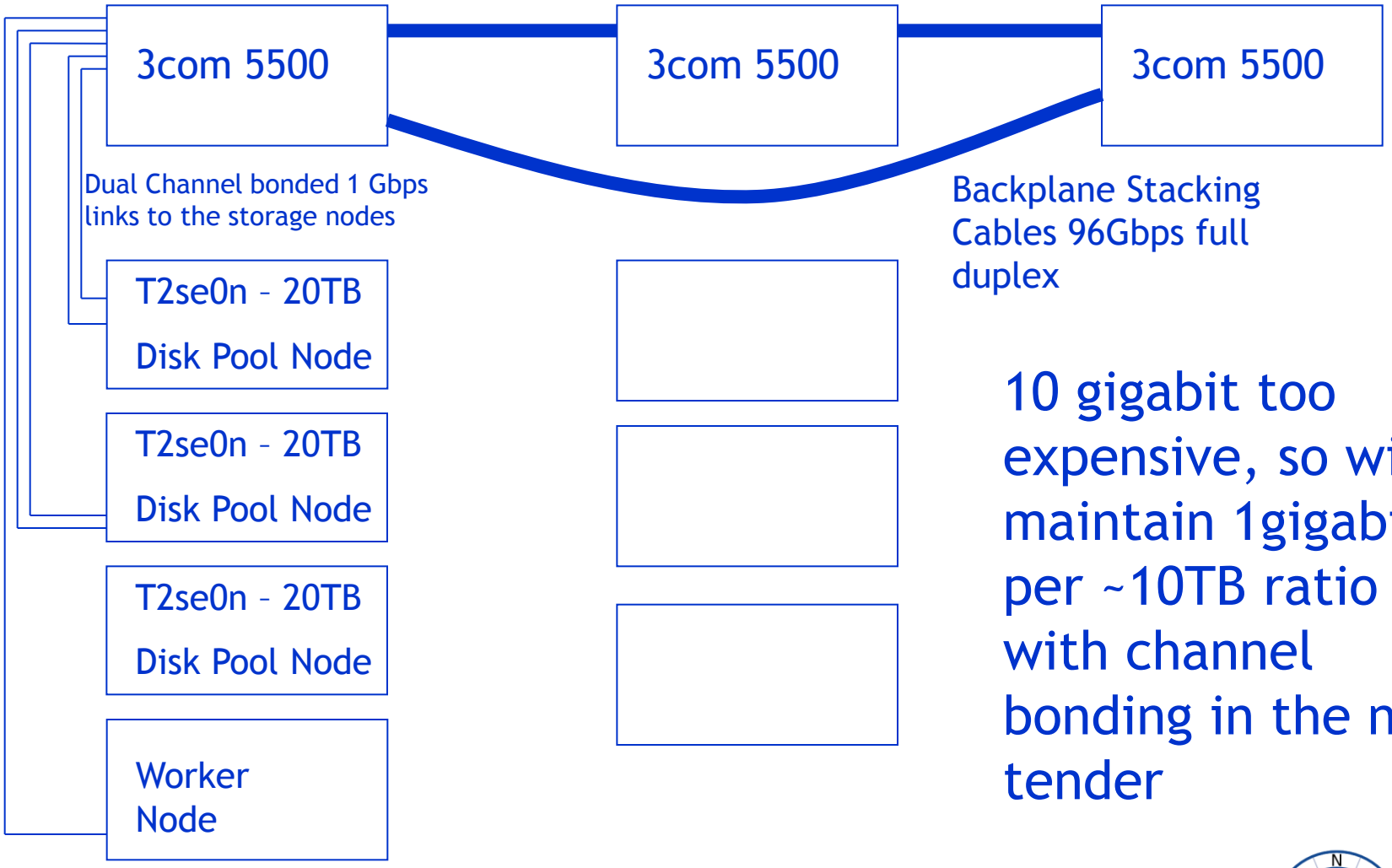
located at Begbroke. Tendering for upgrade



Grid Cluster Network setup

GridPP UK Computing for Particle Physics

Oxford



10 gigabit too expensive, so will maintain 1gigabit per ~10TB ratio with channel bonding in the new tender

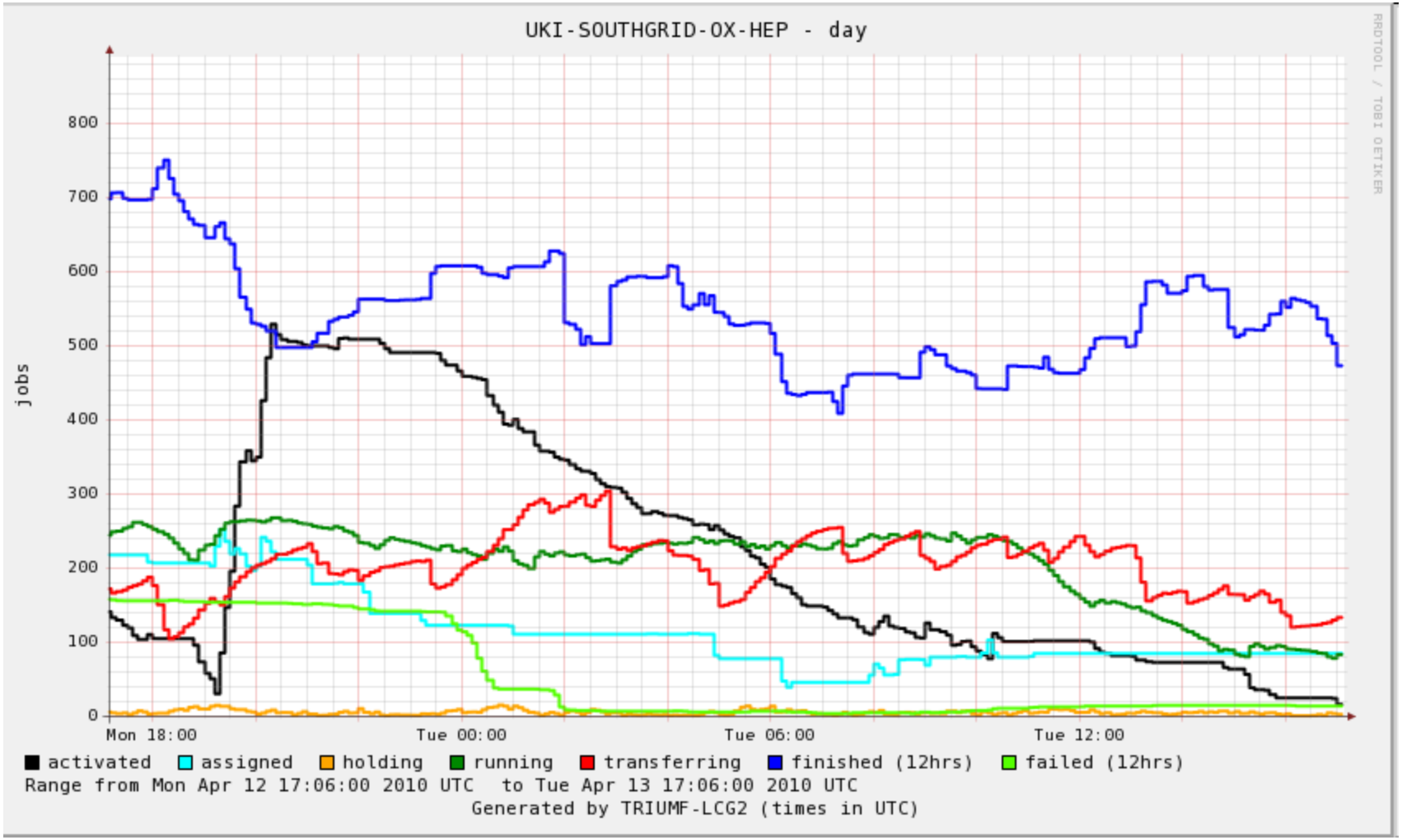
Tender for new Kit

- Storage likely to be 36 bay *2TB supermicro servers
- Compute node options based twin squared supermicro with
  - AMD 8 core Best Value for money
  - AMD 12core
  - Intel 4 core
  - Intel 6 core

  3GB RAM per core

  Dual SAS local disks
- APC racks, PDUs and UPSs
- 3COM 5500G network switches to extend our existing infrastructure

Atlas Monitoring



GridPP
UK Computing for Particle Physics

PBSWEBMON

Cluster status
2010-04-13 18:11:01
Refreshes every 30 seconds.

- [x] Show all job details
- [x] Header always on top
- [ ] Auto-refresh

Users

User	R	Q	E	C	H	W	Efficiency
atlaspilot015	0	37	0	0	0	0	0
atlaspilot010	0	19	0	0	0	0	0
ngs067	0	0	0	0	0	1	0
ngs073	0	0	0	0	0	1	0
atlassgm	1	0	0	0	0	0	1
lhcbpilot000	1	0	0	0	0	0	93
opssgm	1	1	0	0	0	0	1
cms114	19	0	0	0	0	0	99
cms050	2	0	0	0	0	0	88
camont064	42	1	0	0	0	0	99
honeprd	55	0	0	0	0	0	79
cms006	57	0	0	0	0	0	74
cms007	6	0	0	0	0	0	100
atlaspilot008	8	0	0	0	0	0	34
atlasprd	87	109	0	0	0	0	97
cms102	97	0	0	0	0	0	99
Total	376	167	0	0	0	2	

Queues

Name	Running	Queued	Held
expressfive	1	1	0
longfive	215	109	0
shortfive	65	1	0
mediumfive	95	56	0
Total	376	167	0

Nodes

State	Count
down	0
free	0
offline	0
down,offline	0
down,job-exclusive	0
state-unknown	0
down,busy	0
busy	0
offline,job-exclusive,busy	0
offline,job-exclusive	0
down,job-exclusive,busy	0
down,offline,job-exclusive	0
down,offline,job-exclusive,busy	0
job-exclusive	38
job-exclusive,busy	9
Total	47

t2wn40.physics.ox.ac.uk Show jobs
8 jobs, 5 users, 16.44 GB, 8.04 load

0:	1135191	atlasped	98.83%	0.76/0.00 GB
1:	1136583	camont064	100.38%	0.92/0.00 GB
2:	1137597	cms006	88.28%	1.16/0.00 GB
3:	1135891	cms102	98.77%	0.88/0.00 GB
4:	1135442	atlasped	98.58%	0.76/0.00 GB
5:	1137797	atlaspilot008	78.17%	0.20/0.00 GB
6:	1137033	cms006	96.99%	1.18/0.00 GB
7:	1135192	atlasped	98.88%	0.76/0.00 GB

t2wn42.physics.ox.ac.uk Show jobs
8 jobs, 6 users, 16.44 GB, 7.46 load

0:	1137171	camont064	104.05%	0.61/0.00 GB
1:	1135239	atlasped	99.00%	0.76/0.00 GB
2:	1135876	cms102	99.56%	0.89/0.00 GB
3:	1135354	atlasped	99.19%	0.76/0.00 GB
4:	1130018	cms007	99.77%	1.03/0.00 GB
5:	1135506	cms006	32.55%	1.19/0.00 GB
6:	1135974	cms102	98.83%	0.90/0.00 GB
7:	1137204	camont064	101.64%	0.74/0.00 GB

t2wn43.physics.ox.ac.uk Show jobs
8 jobs, 5 users, 16.44 GB, 6.29 load

0:	1135342	atlasped	98.62%	0.76/0.00 GB
1:	1137540	honeped	1.90%	0.04/0.00 GB
2:	1130401	cms007	99.58%	1.05/0.00 GB
3:	1137282	cms006	95.28%	1.17/0.00 GB
4:	1136571	cms006	67.94%	1.19/0.00 GB
5:	1130036	cms007	98.66%	1.04/0.00 GB
6:	1137336	cms006	97.70%	1.17/0.00 GB
7:	1137092	camont064	103.23%	0.62/0.00 GB

t2wn44.physics.ox.ac.uk Show jobs
8 jobs, 3 users, 16.44 GB, 10.88 load

0:	1136518	camont064	100.02%	1.01/0.00 GB
1:	1135920	cms102	98.37%	0.89/0.00 GB
2:	1136800	camont064	99.51%	0.75/0.00 GB
3:	1136359	camont064	100.74%	1.17/0.00 GB
4:	1135338	atlasped	96.84%	0.76/0.00 GB
5:	1135457	atlasped	90.04%	0.74/0.00 GB
6:	1134962	atlasped	97.62%	0.77/0.00 GB
7:	1135863	cms102	98.09%	0.89/0.00 GB

t2wn45.physics.ox.ac.uk Show jobs
8 jobs, 4 users, 16.44 GB, 5.96 load

0:	1135344	atlasped	98.63%	0.76/0.00 GB
1:	1135901	cms102	99.60%	0.89/0.00 GB
2:	1137459	honeped	76.44%	0.26/0.00 GB
3:	1135619	cms006	34.39%	1.19/0.00 GB
4:	1136828	cms006	86.69%	1.19/0.00 GB
5:	1135188	atlasped	99.23%	0.77/0.00 GB
6:	1135349	atlasped	98.83%	0.76/0.00 GB
7:	1135536	atlasped	89.63%	0.50/0.00 GB

t2wn46.physics.ox.ac.uk Show jobs
8 jobs, 4 users, 16.44 GB, 7.12 load

0:	1130020	cms007	99.52%	1.04/0.00 GB
1:	1135537	atlasped	83.88%	0.50/0.00 GB
2:	1137426	camont064	90.96%	0.73/0.00 GB
3:	1136823	cms006	81.22%	1.18/0.00 GB
4:	1135538	atlasped	81.91%	0.50/0.00 GB
5:	1135206	atlasped	99.60%	0.76/0.00 GB
6:	1135535	atlasped	88.63%	0.50/0.00 GB
7:	1137794	camont064	71.69%	0.77/0.00 GB

t2wn47.physics.ox.ac.uk Show jobs
8 jobs, 5 users, 12.30 GB, 6.02 load

0:	1135533	atlasped	87.79%	0.50/0.00 GB
1:	1135861	cms102	99.29%	0.89/0.00 GB
2:	1135763	cms006	37.41%	1.19/0.00 GB
3:	1137178	cms006	0.98%	0.02/0.00 GB
4:	1135229	atlasped	99.51%	0.76/0.00 GB
5:	1135353	atlasped	99.39%	0.76/0.00 GB
6:	1137258	honeped	83.78%	0.26/0.00 GB
7:	1135532	atlasped	87.48%	0.50/0.00 GB

t2wn48.physics.ox.ac.uk Show jobs
8 jobs, 5 users, 16.44 GB, 6.39 load

0:	1135726	cms006	32.77%	1.19/0.00 GB
1:	1137667	cms006	85.99%	1.12/0.00 GB
2:	1135252	atlasped	98.47%	0.76/0.00 GB
3:	1137516	honeped	68.71%	0.26/0.00 GB
4:	1135855	cms102	98.89%	0.89/0.00 GB
5:	1137427	camont064	97.53%	0.69/0.00 GB
6:	1136804	camont064	103.17%	0.77/0.00 GB
7:	1136718	cms006	79.67%	1.19/0.00 GB

t2wn49.physics.ox.ac.uk Show jobs

t2wn50.physics.ox.ac.uk Show jobs

t2wn51.physics.ox.ac.uk Show jobs

t2wn52.physics.ox.ac.uk Show jobs

Ganglia

Ganglia .sourceforge.net

t2manage02-test Grid Report for Tue, 13 Apr 2010 18:09:10 +0100 Get Fresh Data

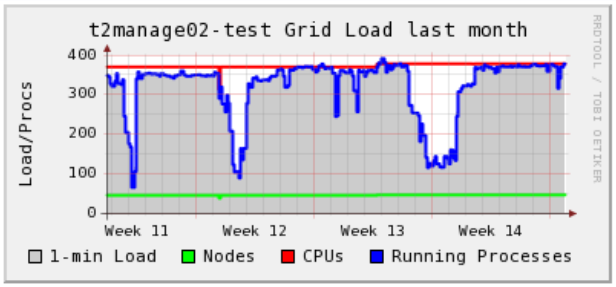
Last month Sorted descending

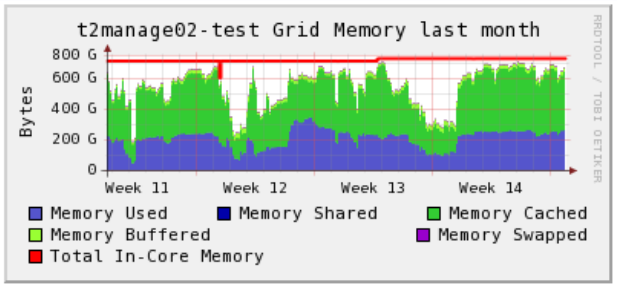
t2manage02-test Grid > –Choose a Source

t2manage02-test Grid (3 sources) (tree view)

CPUs Total: 376
Hosts up: 47
Hosts down: 0

Avg Load (15, 5, 1m): 97%, 97%, 98%
Localtime: 2010-04-13 18:09

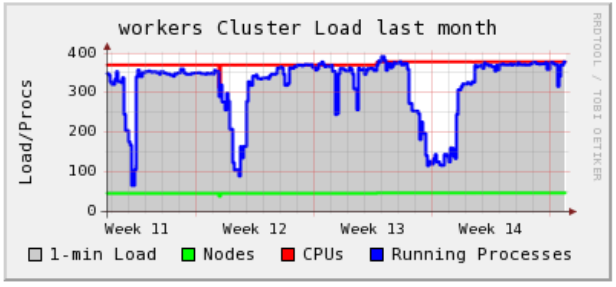


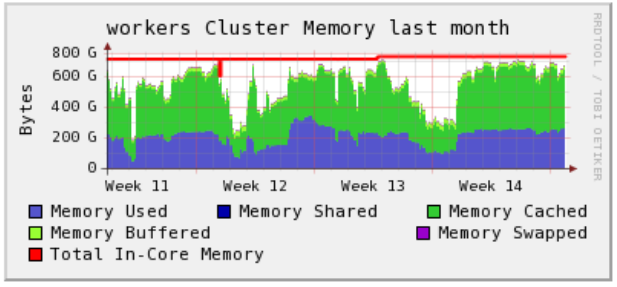


workers (physical view)

CPUs Total: 376
Hosts up: 47
Hosts down: 0

Avg Load (15, 5, 1m): 97%, 97%, 98%
Localtime: 2010-04-13 18:08





Command Line

- showq | more
- pbsnodes –l
- qstat –an
- ont2wns df -hl

Local Campus Network Monitoring

GridPP
UK Computing for Particle Physics

Oxford University Computing Services

Tuesday 13. Apr 2010

[Networks Home]

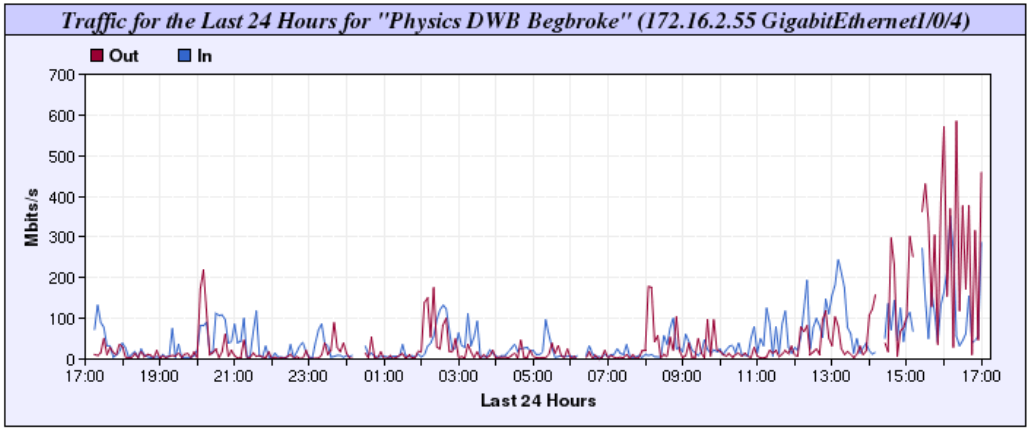
Logged in as:
Peter Gronbech.
(If you're not Peter Gronbech, click here)

Helpful links

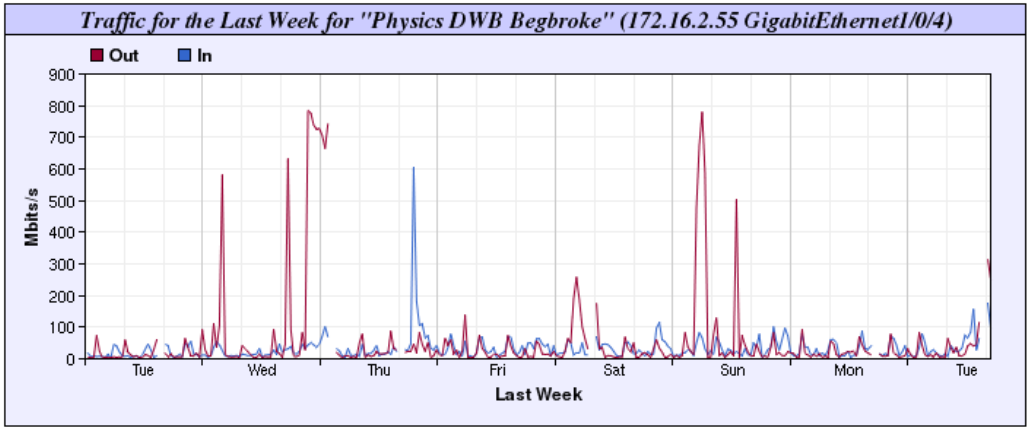
Main OUCS website
Report a bug

Traffic and Latency Graphs

Past Day

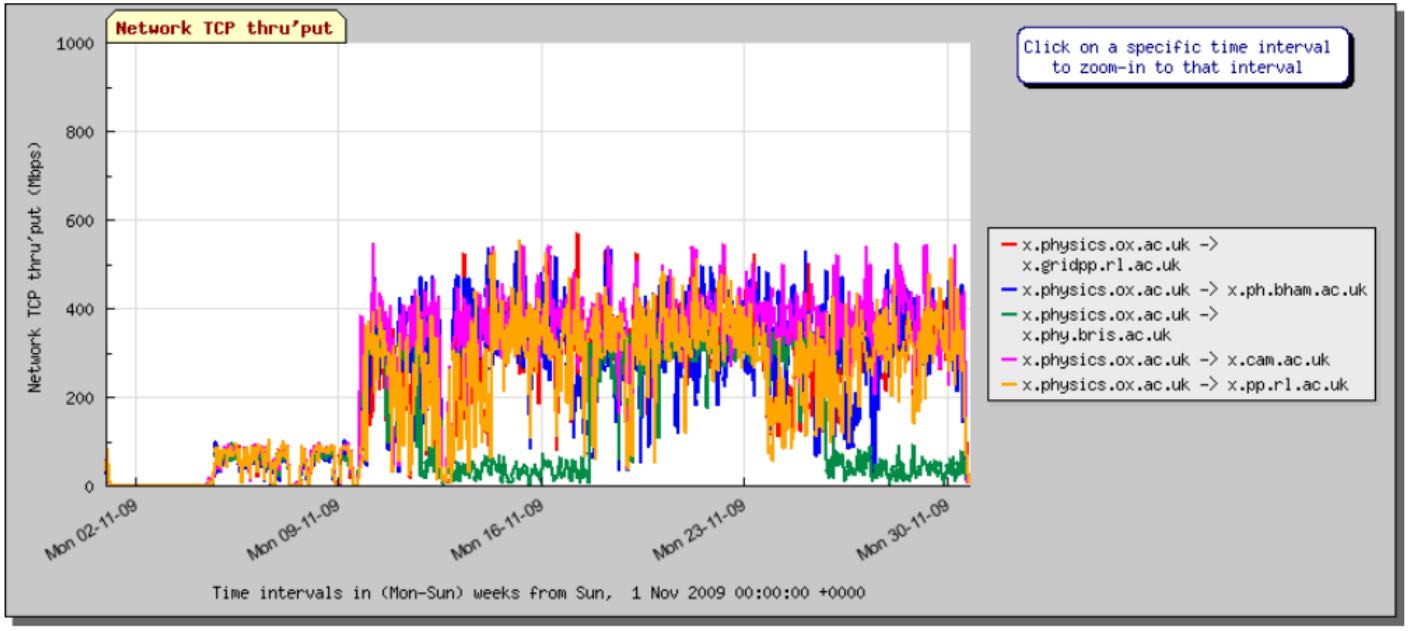


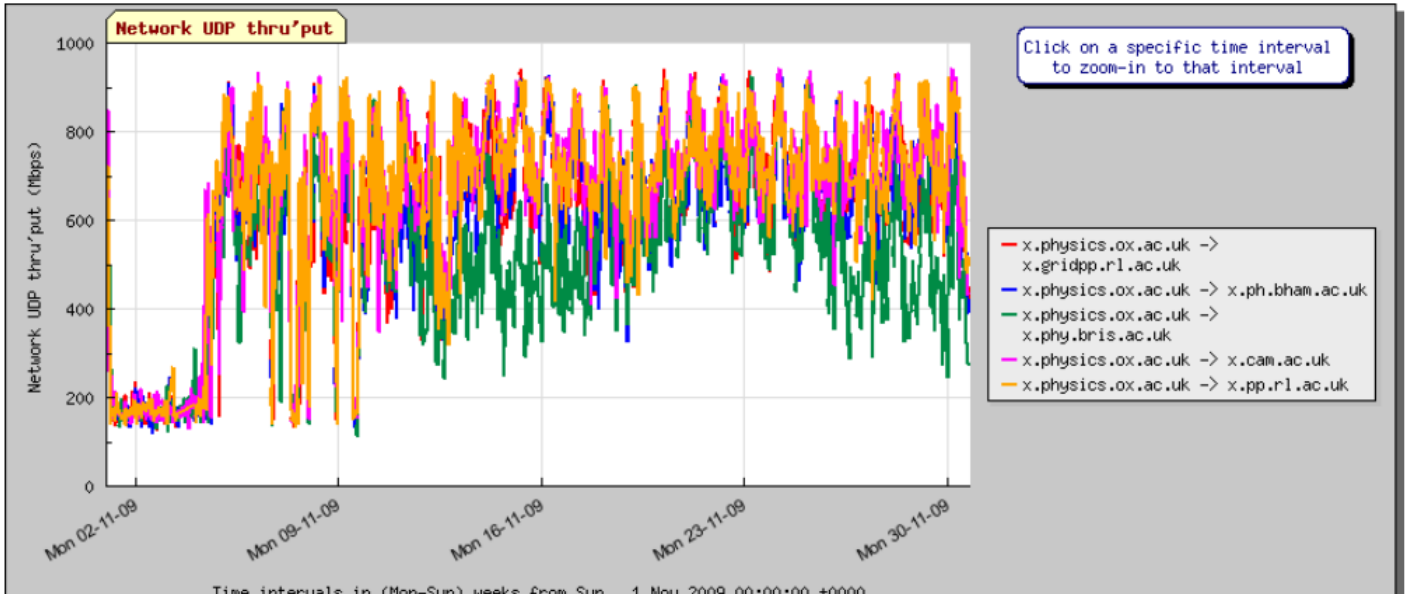
Past Week



Past Month

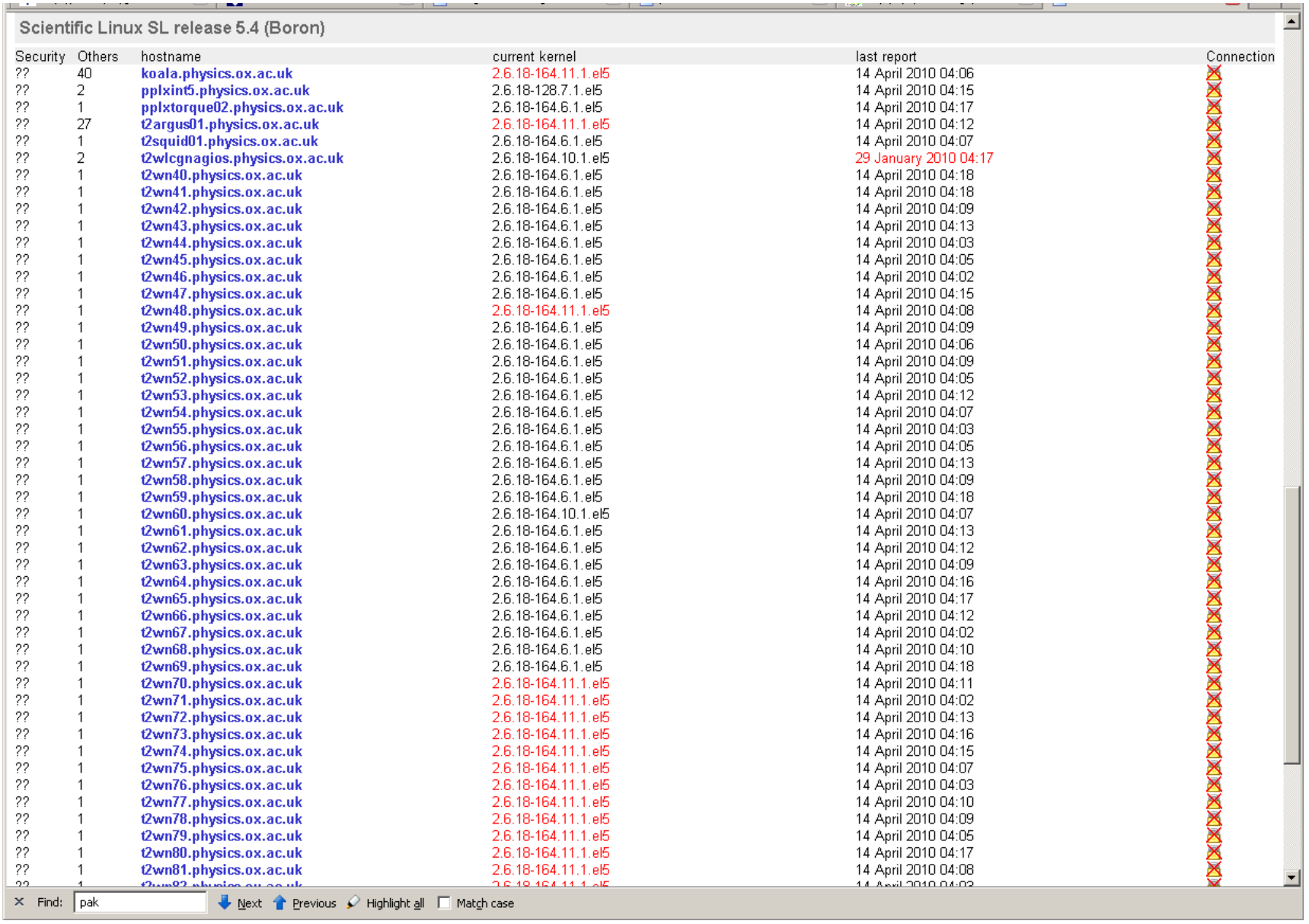
Gridmon


Network TCP thru'put
Click on a specific time interval to zoom-in to that interval
Network TCP thru'put (Mbps)
1000
800
600
400
200
0
Mon 02-11-09
Mon 09-11-09
Mon 16-11-09
Mon 23-11-09
Mon 30-11-09
Time intervals in (Mon-Sun) weeks from Sun, 1 Nov 2009 00:00:00 +0000
x.physics.ox.ac.uk -> x.gridpp.rl.ac.uk
x.physics.ox.ac.uk -> x.ph.bham.ac.uk
x.physics.ox.ac.uk -> x.phy.bris.ac.uk
x.physics.ox.ac.uk -> x.cam.ac.uk
x.physics.ox.ac.uk -> x.pp.rl.ac.uk


Network UDP thru'put
Click on a specific time interval to zoom-in to that interval
Network UDP thru'put (Mbps)
1000
800
600
400
200
0
Mon 02-11-09
Mon 09-11-09
Mon 16-11-09
Mon 23-11-09
Mon 30-11-09
x.physics.ox.ac.uk -> x.gridpp.rl.ac.uk
x.physics.ox.ac.uk -> x.ph.bham.ac.uk
x.physics.ox.ac.uk -> x.phy.bris.ac.uk
x.physics.ox.ac.uk -> x.cam.ac.uk
x.physics.ox.ac.uk -> x.pp.rl.ac.uk

Patch levels - Pakiti v1 vs v2

GridPP
UK Computing for Particle Physics



Scientific Linux SL release 5.4 (Boron)

Security	Others	hostname	current kernel	last report	Connection
??	40	koala.physics.ox.ac.uk	2.6.18-164.11.1.el5	14 April 2010 04:06	
??	2	pplxint5.physics.ox.ac.uk	2.6.18-128.7.1.el5	14 April 2010 04:15	
??	1	pplxtorque02.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:17	
??	27	t2argus01.physics.ox.ac.uk	2.6.18-164.11.1.el5	14 April 2010 04:12	
??	1	t2squid01.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:07	
??	2	t2wlcgnagios.physics.ox.ac.uk	2.6.18-164.10.1.el5	29 January 2010 04:17	
??	1	t2wn40.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:18	
??	1	t2wn41.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:18	
??	1	t2wn42.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:09	
??	1	t2wn43.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:13	
??	1	t2wn44.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:03	
??	1	t2wn45.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:05	
??	1	t2wn46.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:02	
??	1	t2wn47.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:15	
??	1	t2wn48.physics.ox.ac.uk	2.6.18-164.11.1.el5	14 April 2010 04:08	
??	1	t2wn49.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:09	
??	1	t2wn50.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:06	
??	1	t2wn51.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:09	
??	1	t2wn52.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:05	
??	1	t2wn53.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:12	
??	1	t2wn54.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:07	
??	1	t2wn55.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:03	
??	1	t2wn56.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:05	
??	1	t2wn57.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:13	
??	1	t2wn58.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:09	
??	1	t2wn59.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:18	
??	1	t2wn60.physics.ox.ac.uk	2.6.18-164.10.1.el5	14 April 2010 04:07	
??	1	t2wn61.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:13	
??	1	t2wn62.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:12	
??	1	t2wn63.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:09	
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??	1	t2wn65.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:17	
??	1	t2wn66.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:12	
??	1	t2wn67.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:02	
??	1	t2wn68.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:10	
??	1	t2wn69.physics.ox.ac.uk	2.6.18-164.6.1.el5	14 April 2010 04:18	
??	1	t2wn70.physics.ox.ac.uk	2.6.18-164.11.1.el5	14 April 2010 04:11	
??	1	t2wn71.physics.ox.ac.uk	2.6.18-164.11.1.el5	14 April 2010 04:02	
??	1	t2wn72.physics.ox.ac.uk	2.6.18-164.11.1.el5	14 April 2010 04:13	
??	1	t2wn73.physics.ox.ac.uk	2.6.18-164.11.1.el5	14 April 2010 04:16	
??	1	t2wn74.physics.ox.ac.uk	2.6.18-164.11.1.el5	14 April 2010 04:15	
??	1	t2wn75.physics.ox.ac.uk	2.6.18-164.11.1.el5	14 April 2010 04:07	
??	1	t2wn76.physics.ox.ac.uk	2.6.18-164.11.1.el5	14 April 2010 04:03	
??	1	t2wn77.physics.ox.ac.uk	2.6.18-164.11.1.el5	14 April 2010 04:10	
??	1	t2wn78.physics.ox.ac.uk	2.6.18-164.11.1.el5	14 April 2010 04:09	
??	1	t2wn79.physics.ox.ac.uk	2.6.18-164.11.1.el5	14 April 2010 04:05	
??	1	t2wn80.physics.ox.ac.uk	2.6.18-164.11.1.el5	14 April 2010 04:17	
??	1	t2wn81.physics.ox.ac.uk	2.6.18-164.11.1.el5	14 April 2010 04:08	

Find: pak Next Previous Highlight all Match case

Monitoring tools etc

Site	Pakiti	Ganglia	Pbswebmon	Scas,glexec, argus
JET	No	Yes	No	No
Bham	Yes	Yes	No	No,yes,yes
Brist	Yes, v1	Yes	No	No
Cam	No	Yes	No	No
Ox	V1 production, v2 test	Yes	Yes	Yes, yes, no
RALPP	V1	Yes	No	No (but started on scas)

Conclusions

- SouthGrid sites utilisation improving
- Many had recent upgrades others putting out tenders
- Will be purchasing new hardware in gridpp3 second tranche
- Monitoring for production running improving