

Accounting



APEL vs. ProdDB

- Try to reconcile APEL accounting figures for February ATLAS production against ATLAS Production Database Figures
- These will not be exact, but should be close

APEL

- APEL figures taken from web:

Normalised CPU time [units 1K.SI2K.Hours] by SITE and VO							
SITE	alice	atlas	cms	lhcb	Other VOs	Total	%
cpDIASie	0	0	0	0	12	12	0.00%
csTCDie	9	108,405	204	197,010	158,967	464,595	4.85%
EFDA-JET	8	69	85	55,505	6,049	61,716	0.64%
RAL-LCG2	400	1,091,634	497,839	117,921	107,836	1,815,630	18.97%
UKI-LT2-Brunel	25	101,511	174,057	177,284	57,983	510,860	5.34%
UKI-LT2-IC-HEP	26	111,823	171,363	450,757	371,570	1,105,539	11.55%
UKI-LT2-IC-LeSC	0	176	212	1,018	110	1,516	0.02%
UKI-LT2-QMUL	0	518,962	62,628	233,549	183,993	999,132	10.44%
UKI-LT2-RHUL	0	302,621	66,560	159,740	43,637	572,558	5.98%
UKI-LT2-UCL-CENTRAL	0	1	0	2,022	1	2,024	0.02%
UKI-LT2-UCL-HEP	0	6,189	0	0	37	6,226	0.07%
UKI-NORTHGRID-LANCS-HEP	6	82,569	105	18,189	3,997	104,866	1.10%
UKI-NORTHGRID-LIV-HEP	11	134,785	117	205,393	14,388	354,694	3.71%
UKI-NORTHGRID-SHEF-HEP	3	95,255	88	55,596	12,281	163,223	1.71%
UKI-SCOTGRID-DURHAM	0	819	181	337,142	222,252	560,394	5.85%
UKI-SCOTGRID-ECDF	0	134,254	3,877	31,526	18,693	188,350	1.97%
UKI-SCOTGRID-GLASGOW	0	743,937	250	298,367	254,310	1,296,864	13.55%
UKI-SOUTHGRID-BHAM-HEP	27	2,638	321	180,235	11,888	195,109	2.04%
UKI-SOUTHGRID-BRIS-HEP	3	100	11,019	22,763	31	33,916	0.35%
UKI-SOUTHGRID-CAM-HEP	0	106,978	0	51,035	16,526	174,539	1.82%
UKI-SOUTHGRID-OX-HEP	7	165,046	15,713	234,221	39,782	454,769	4.75%
UKI-SOUTHGRID-RALPP	15	71,978	176,663	198,539	58,898	506,093	5.29%
Total	540	3,779,750	1,181,282	3,027,812	1,583,241	9,572,625	
Percentage	0.01%	39.48%	12.34%	31.63%	16.54%		

[Click here for a csv dump of this table](#)

ProdDB

- SQL> select count(*), sum(cpucount), CPUMODEL from ejobexe where CREATIONTIME>='01-FEB-09' and CREATIONTIME<='28-FEB-09' and execluster like 'UKI-SOUTHGRID-GLASGOW%' group by cpumodel;

Jobs	Sum CPU	CPU Model
60786	1083592762	Intel(R) Xeon(R) CPU E5420@ 2.50GHz 6144 KB
20455	496276393	Dual Core AMD Opteron(tm) Processor 280 1024 KB

Re-normalising ProdDB Numbers

- There is a broken CPU scaling applied to CPU seconds recorded in ProdDB
- This can be undone by multiplying by $644/1400 * \text{CPU_Freq}$ (2.1 GHz ~ 1.0)

Convert to HEP- SPEC2006

- HEP-SPEC2006 is the new benchmark for HEP code
- Quite a few numbers are available for recent CPUs
- Benchmarks from RAL, Glasgow, Oxford
- Allows intelligent guess for older CPUs (e.g., scale by clock frequency)

Then...

- Compare the ratio of fraction of ATLAS SI2K delivered by the site vs. fraction of HEP-SPEC delivered by the site

Results

Site	Normalised HEP-SPEC2006 Hours	HEP SPEC Fraction	Normalised KSI2K Hours	KSI2K Fraction	KSI2K/HEP-SPEC (1.0 = same resource delivery measured both ways; >1.0 over reporting via APEL; <1.0 under reporting via APEL)
RAL-LCG2	3,586,359	30.25%	1,091,634	29.82%	0.99
UKI-LT2-Brunel	101,698	0.86%	101,511	2.77%	3.23
UKI-LT2-IC-HEP	226,057	1.91%	111,823	3.05%	1.60
UKI-LT2-QMUL	1,477,497	12.46%	518,962	14.17%	1.14
UKI-LT2-RHUL	797,555	6.73%	302,621	8.27%	1.23
UKI-NORTHGRID-LANCS-HEP	408,836	3.45%	82,569	2.26%	0.65
UKI-NORTHGRID-LIV-HEP	306,976	2.59%	134,785	3.68%	1.42
UKI-NORTHGRID-MAN-HEP	640,449	5.40%	0	0.00%	0.00
UKI-NORTHGRID-SHEF-HEP	408,987	3.45%	95,255	2.60%	0.75
UKI-SCOTGRID-ECDF	167,266	1.41%	134,254	3.67%	2.60
UKI-SCOTGRID-GLASGOW	2,973,311	25.08%	743,937	20.32%	0.81
UKI-SOUTHGRID-CAM-HEP	179,632	1.52%	106,978	2.92%	1.93
UKI-SOUTHGRID-OX-HEP	364,017	3.07%	165,046	4.51%	1.47
UKI-SOUTHGRID-RALPP	214,261	1.81%	71,978	1.97%	1.09
Total	11,853,807		3,661,353		

- N.B. Smaller sites suppressed
- When Manchester publish to APEL they will push everyone else's APEL numbers down a bit

Conclusions

- These numbers are startlingly different
- Too much to be explained by the fact that production is a subset of ATLAS work
- Need to have clarity before we write cheques so...

Proposal

- All sites benchmark their CPUs using HEP-SPEC06
 - This needs to be done anyway for WLCG
- Sites use their batch system logs to calculate their delivered HEP-SPEC06 hours
 - This means inhomogeneities are dealt with consistently
- We exercise a cross check with VO accounting again
 - Especially useful if sites can break down production vs. other activities