Belle II CPU Resource Accounting

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DESY

Introduction

> We need thorough accounting to plan computing needs and justify pledges

> BPAC asked for a thorough assessment of the resource usage

> Computing resources

- CPU cycles normalized   [cpu/wall time*HS06*h]   ('*Jobs are transient*')

- Storage accumulating   [used volume / TB]   ('*Files are persistent*')

- (Network bandwidth   [peak usage / Gbps ?]   ('*widely shared*'))

> Our experiences at DESY have showed that accounting / pledging is not trivial

- Technically challenging (APEL)

- Interpretation of data (VO view vs. admins view vs. managers view)

- Dealing with opportunistically used resources (surplus)

Sources

> ## EGI Accounting

- The EGI Accounting Portal is an EGI service provided by CESGA

> ## OSG Accounting

- *Gratia* (contributed as an OSG activity, Grid Accounting)

> ## Else

- Clouds / HPC / Trigger farms of non-EGI / non-OSG sites

> ## DIRAC Accounting

- Pilot Frame work
- Belle II MC production is exclusively handled by DIRAC
- HEPSPEC06 values are part of the site configs in DIRAC
- https://dirac.cc.kek.jp

Normalized CPU used by Country
31 Days from 2016-11-30 to 2016-12-31

Max: 3.24, Min: 0.13, Average: 1.73, Current: 3.24
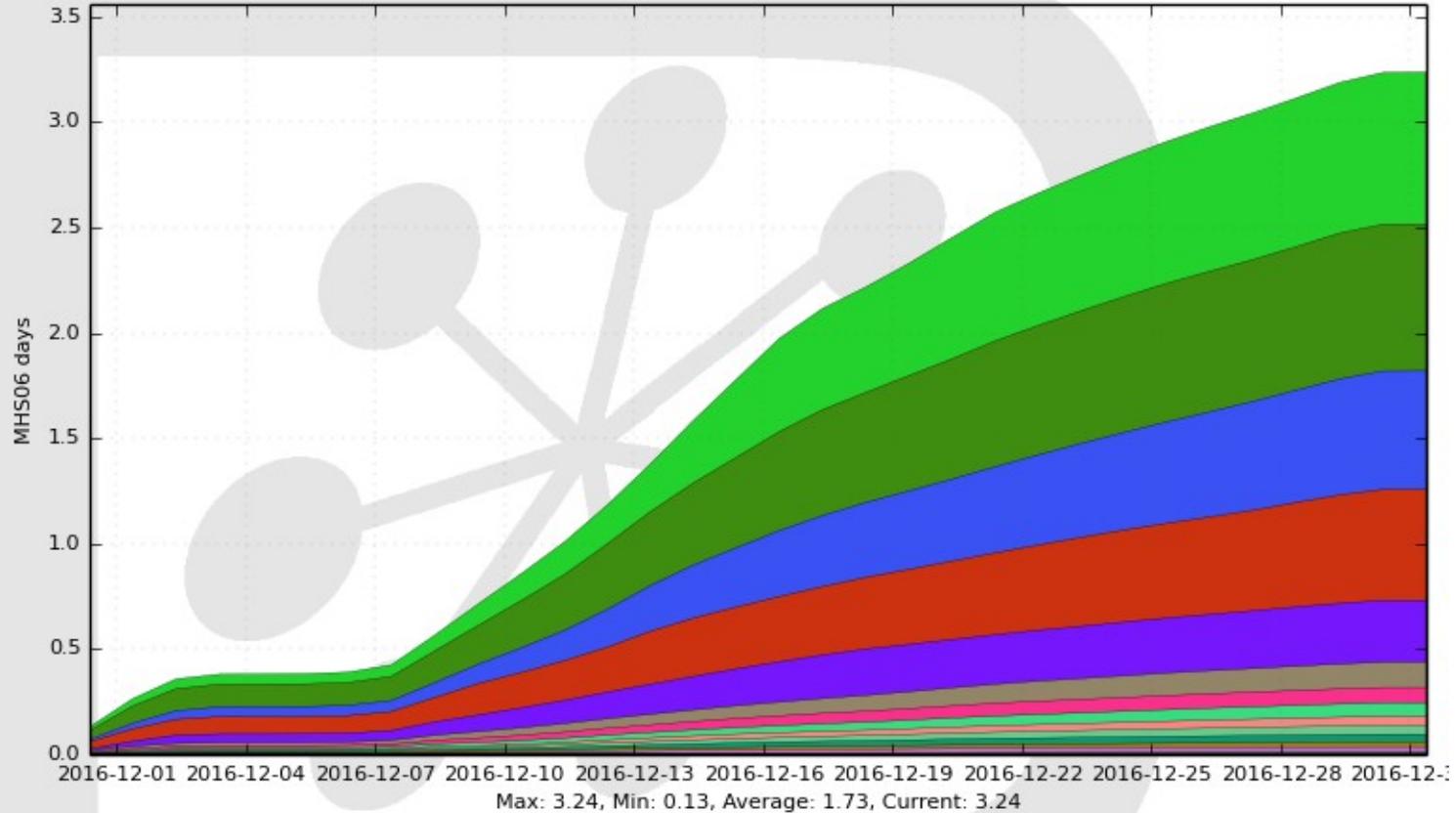
JP	0.7	CZ	0.1	MX	0.0	SI	0.0
CA	0.7	RU	0.1	PL	0.0	ANY	0.0
DE	0.6	KR	0.1	IN	0.0	CN	0.0
IT	0.5	AT	0.0	TW	0.0		
US	0.3	AU	0.0	TR	0.0		

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Normalized CPU used by Country

31 Days from 2016-11-30 to 2016-12-31

Max: 77,641,282, Min: 3,128,150, Average: 41,521,845, Current: 77,641,282
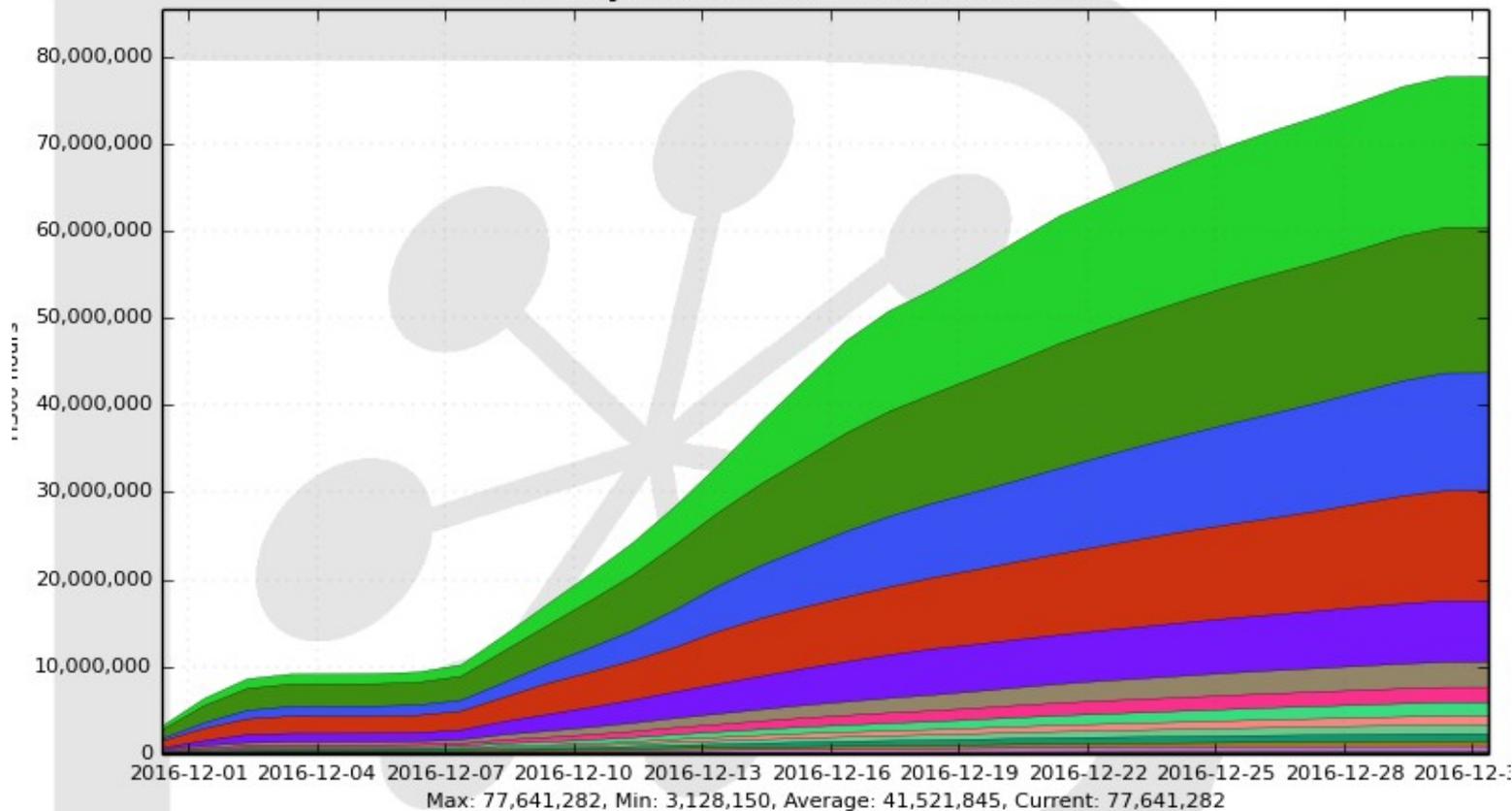
JP	17267735.5	CZ	2886767.0	MX	850011.1	SI	68876.0
CA	16694656.4	RU	1741160.0	PL	626996.2	ANY	1349.9
DE	13500695.2	KR	1529149.1	IN	532396.7	CN	25.9
IT	12637748.7	AT	1033545.9	TW	121444.5		
US	7030817.5	AU	1012903.4	TR	105003.2		

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DIRAC Accounting vs. Pledges

> December 2016 data (busiest month of MC7)

Country	Used [kHS06]	Pledged [kHS06]
Japan	23	32
Canada	22	4
Germany	18	18
Italy	17	17
USA	9	20
Czech	4	1.7
Russia	2.1	12
Korea	2.0	7
Austria	1.4	2.6
Australia	1.4	4.3
Mexico	1.1	2.6
Poland	0.8	3
India	0.7	5
...	...	...
Total	140	148

Conclusions

> We considered EGI Account Portal (APEL), OSG (Gratia), DIRAC

> We had contact the Cath Noble (CERN) of EGI who gave some instructions

> DIRAC is run by Ueda-san et al.

> For now DIRAC seems to be most complete

> More understanding of DIRAC vs. EGI needed though

> DIRAC has fixed HS06 / site

> EGI can be automated

> For BPAC:

- December 2016 was the busiest month for Belle II

- (Only) in December 2016 Belle II was close to the pledges