

Compute Session

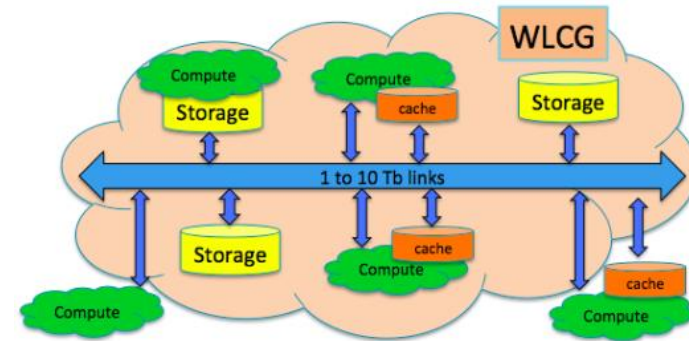
- Compute model session
 - SKA presentation – Anna Scaife, Jodrel Bank
 - Review of experiment plans – Simone Campana
 - Lightweight sites and other ideas – Maarten Litmaath
- Containers
 - Singularity and OSG – Brian Bockelmann
 - Containers at RAL T1 – Andrew Lahif
- 50 / 50, presentation / discussion

SKA compute – Anna Scaife

- Intro to Square Kilometer Array
- Local online processing – but bulk of analysis will be done at regional centres (e.g AENEAS in Europe)
- Data volumes and compute requirements will be similar to WLCG in early 2020's
 - Lots of different workflows
- Potential collaborations
 - Compute frameworks, middleware and workflows, data management and transfer

Compute models - Simone

- Compute model evolution
 - Network centric, consolidated storage, more diverse compute
- Diverse compute
 - Opportunistic / HPC / Volunteer / containers / cloud
 - How to live with a mix of SLAs
- Different compute models
 - e.g. flat capacity vs. burst
 - Do we have the right tools?
 - How to rationalise provisioning layer?



WLCG at HL-LHC

Batch system	Instances
HTCONDOR	86
LOADLEVELER	2
LSF	52
OGS/GE	2
PBS	88
PBSPRO	1
SGE	40
SLURM	57
TORQUE	169

Models - Maarten

- Potential new models for WLCG sites
 - Lightweight.. How?
 - Do we need CEs / batch systems at all sites?
 - More use of standardised containers?
 - Distributed operations models
 - Homogenise batch systems, run by remote team
 - Run regional batch services?
 - BOINC for T2s?
 - Can we reduce the SLA to make things more flexible?
 - e.g. ATLAS event service, CMS pre-emptable jobs
- -> Ongoing discussions in CWP

Singularity



- Review of Singularity from Brian Bockelmann (OSG)
 - Job isolation from HPC community – rather similar to Docker but with different trade-offs
 - Isolation and OS portability – use OS “chroot” from CVMFS directly
 - Endorsed now by WLCG T&I WG and in use in US OSG and CERN, notably for CMS..
 - we should be able to replace some grid software with it
 - Can be deployed with HTCondor and Docker to provide very clean isolation
 - Site use Docker to isolate jobs, experiments use Singularity to isolate user payloads in the same job

Containers at RAL – Andrew Lahiff

- Job isolation adventures on HTCondor – experiences of how to operate and monitor with Docker and Singularity
- Extending the approach to use Mesos
 - Reported on experience of running services on Mesos
 - Squids with auto-scaling (for CVMFS)
 - Together with running physics jobs on the spare capacity in the Mesos cluster (~5k cores)
 - Investigating Kubernetes as an alternative solution
- →WLCG kicking off Containers WG in this area