Running Jobs Everywhere: an Overview of Batch Services at CERN

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Batch Services: High Throughput

- HTCondor capacity: now > 100k cores
- Almost $2\times$ LSF capacity ever
- LSF reduced to 20k cores before Spring 2018
- LSF service ends once LHC Experiments move
- End of LHC Run 2 at the latest
- Training
- XBatch with Helix Nebula Science Cloud:
  - Tactical engagement with Oracle Bare Metal Cloud
  - Docker universe

Batch Services: Monitoring

BEER, Batch on EOS Extra Resources

- Andrea Sciabà, Andrey Kiryanov's talks (HEPiX Spring 2017)
- Ongoing tests
- Disk server slots as batch slots, no lower-SLA
- Segregating batch functions from disk node:
  - Using cgroups/systemd for the HTCondor service
  - Docker universe (testing CPU set)
  - Dockerised CVMFS
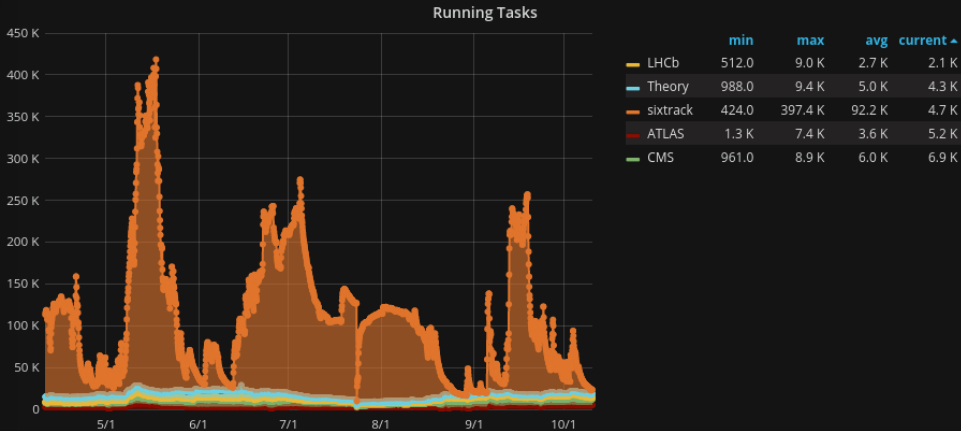
Batch Services: High Performance

- MPI, shared memory across nodes, InfiniBand
- SLURM batch cluster for HPC
- Backfill via HTCondor/SLURM interface

  Advice welcome on this!

Volunteer Computing: LHC@Home

- Accelerator physics simulations (SixTrack): native BOINC app, now also Android
- ATLAS (also Singularity), CMS, LHCb, Theory simulations under CernVM and VirtualBox
- Job management back-end integrated with Condor: wide range of (low-IO/high CPU) apps
- Working with the BOINC community to evolve the BOINC software

Volunteer Computing Consolidation: LHC@Home

Running Tasks

	min	max	avg	current
LHCb	512.0	9.0 K	2.7 K	2.1 K
Theory	988.0	9.4 K	5.0 K	4.3 K
sixtrack	424.0	397.4 K	92.2 K	4.7 K
ATLAS	1.3 K	7.4 K	3.6 K	5.2 K
CMS	961.0	8.9 K	6.0 K	6.9 K