RHUL Site Report

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HEP Sysman meeting   @ RAL, May 2019

Group Activities (update)

ATLAS

- Benefit from strong collaboration in software support.
- Large Tier3 batch compute and storage resources for data analysis.
- DAQ test systems.

Dark Matter & Neutrino

- Detector development: lab DAQ systems and significant quantities of test beam data to store and analyse.
- Growing need for compute and storage resources to simulate and analyse data.
- Need help with things like installation, data movement.
- Have overtaken ATLAS as the largest user of Tier3 storage.

Accelerator

- Small DAQ systems.
- Many small activities around the world which generates unique and valuable data sets.
- Simulation: both embarrassingly parallel and multi-process (MPI) computing.
- Software development infrastructure (e.g. cdash server).

Theory

- Occasional use of Tier3 and HPC clusters.

Tier-2 9 Racks in off-site machine room
Still using 9 racks, no room to expand

Tier-2

- 9 racks in modern machine room provided by central IT service.
- 46 kHS06 in 120 WN (SL6)
- Cream/Torque CE x 2, moving to HTCondorCE & HTC
- 1.4 PB DPM SE in 47 servers
- 8 misc servers including 3 VM hosts running standard network services, provisioning, Grid services.
- New kit from GridPP6 & RHUL funding arriving soon:
  - 12x Dell PowerEdge C6420, 2x Xeon Gold 6148, 80 cores per node, total 12 kHS06
  - 9x Dell R540 HBA 120TB raw, total 1 PB raw
- Lack of space meant we had to remove old machines used to test VAC

Storage
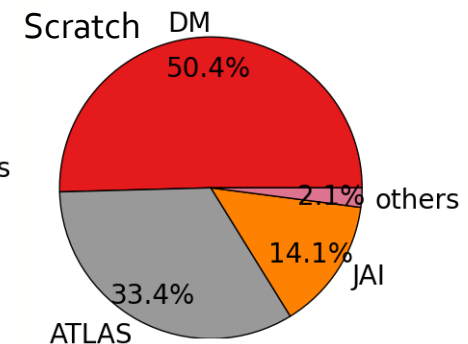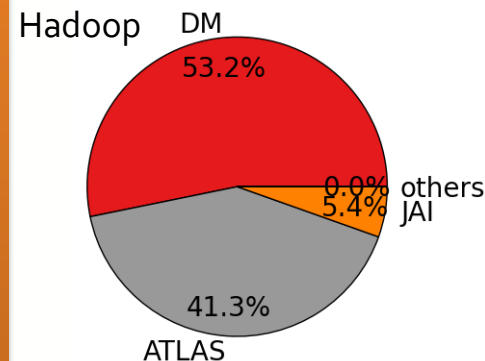
Colours show distinct procurements

Pledge –
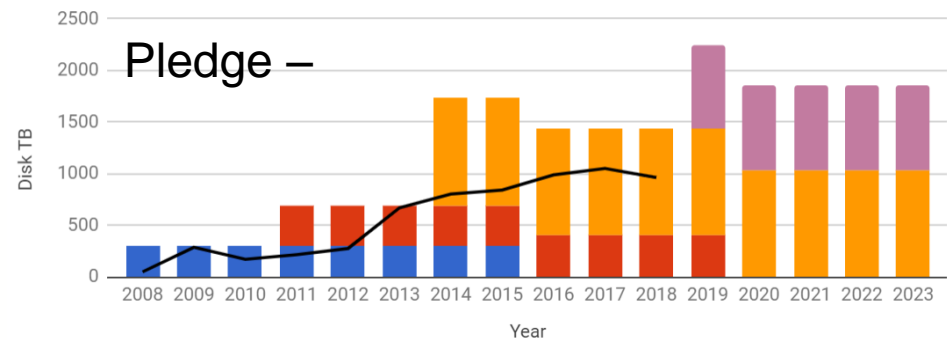
Compute

Pledge –
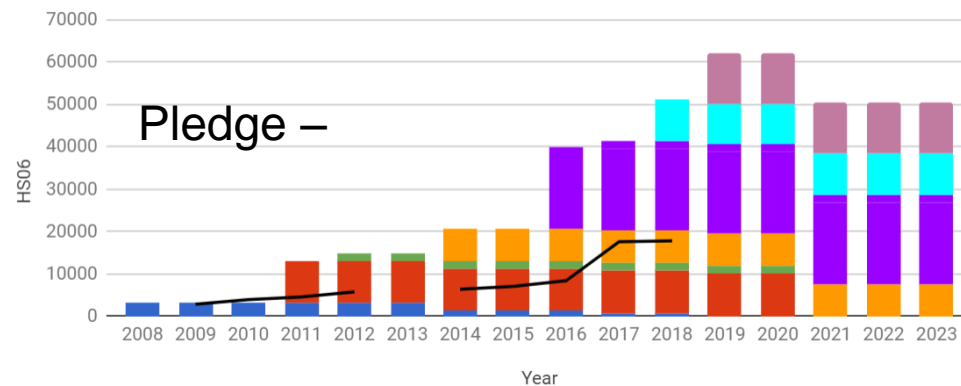
Tier 3

- 8 racks packed into home-made machine room

- Now connected to Tier2 by 10Gb/s fibre

- 6 kHS06 in ~100 old WN, mostly hand downs from Tier2, some upgraded

- Torque/Maui batch system with scaling problems

- Storage:

  - 100 TB Hadoop (3 replicas) using 90 WNs

  - 226 TB NFS scratch over 3 servers

  - 11 TB NFS Home

- 3 VM host machines running multiple redundant squids & NATs, interactive user machines, network services, development services, odds & ends.

Hadoop
- DM 53.2%
- others 0.0%
- JAI 5.4%
- ATLAS 41.3%

Scratch
- DM 50.4%
- others 2.1%
- JAI 14.1%
- ATLAS 33.4%

Plans

Tier2

- Migrate batch system to HTC on CC7 WNs
- Replace CREAM CEs with HTCondorCE
- DPM upgrade? Too soon to replace with cache?
- Retire some older DPM pool nodes
- Add redundant network connections to storage and between switches
- Automate shutdown in case of power cut and backup generator fail
- IPV6: still waiting for local networks team to do the paperwork for the JANET DNS service.
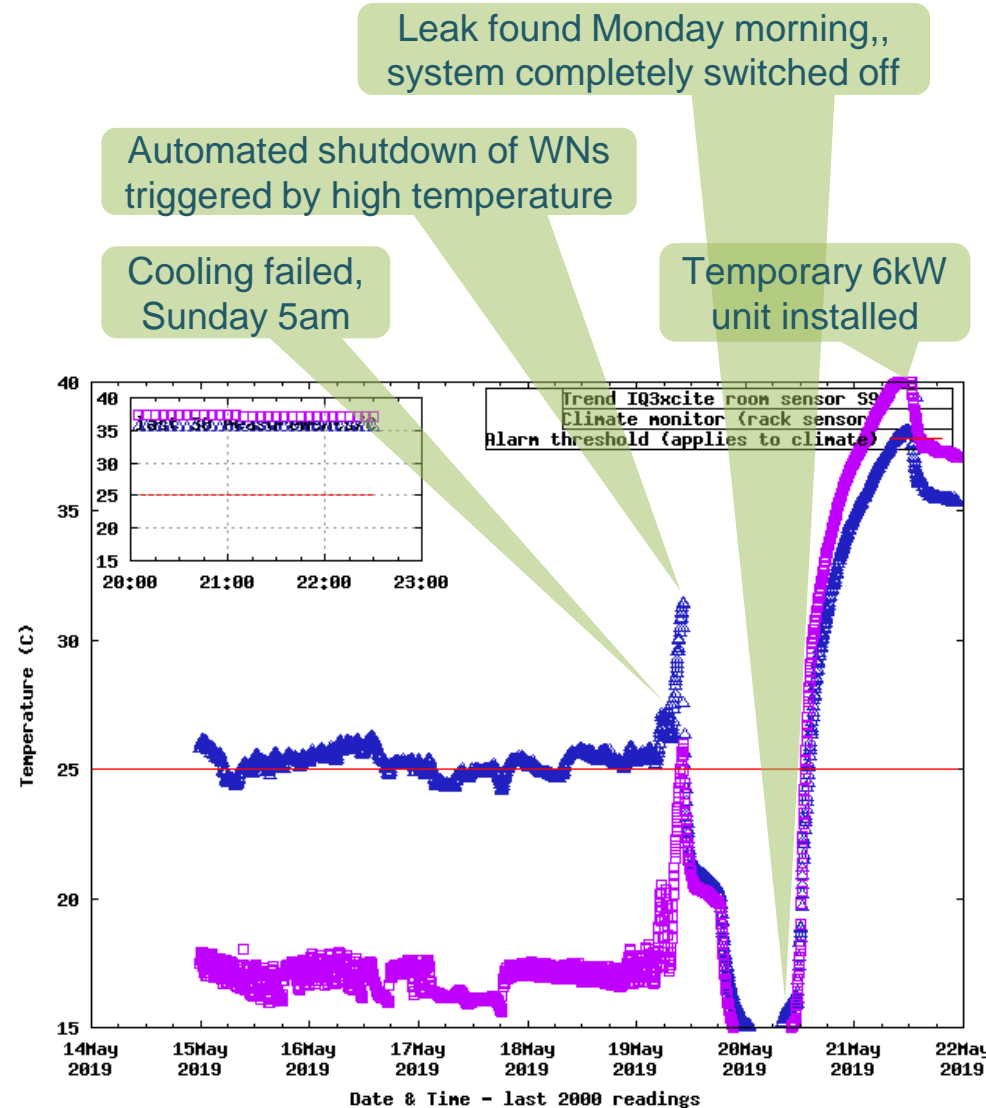
Tier3

- Consolidate batch function onto Tier2 batch system and retire old worker nodes
- Deploy new HDFS storage co-located with Tier2
- Upgrade Tier2-Tier3 connection to 100Gb/s
- Migrate home service to new hardware

Problems

- Tier3 hit by major aircon failure (again, last time was November 2017)

- Good test of our automated shutdown procedures 🙂

- Leak in condenser system will take at least 2 weeks to fix 👎

- Struggling to run bare minimum of systems in indoor room

Leak found Monday morning,, system completely switched off

Automated shutdown of WNs triggered by high temperature

Cooling failed, Sunday 5am

Temporary 6kW unit installed

Thank You