



GridPP

UK Computing for Particle Physics

RAL Tier-1 Report

2019 UK HEP SYSMAN
Rutherford Appleton Laboratory
23-24 May 2019
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- Tier1 Hardware
- New Tape Robot
- Storage - CASTOR & ECHO
- SCD Cloud
- Miscellaneous
- More Miscellaneous
- In and Out
- Any Questions?

Thanks to colleagues for contributions

- CPU: ~273k HS06 (~62k cores)
 - +37k HS06 +40k cores
- Ceph: ~41PB raw / ~29PB configured
 - +21PB raw/+16PB configured
- Tape: 10k slot SL8500
 - 80PB capacity (T10KD), ~30PB physics data
 - 24xT10KD (8.5TB/cart 240MB/sec).

- Spectra Logic Tfinity.
 - Seven frames.
 - 17xLTO8 drives. 1695xLTO-M8 media 17PB total. (9TB/cart 300MB/sec.)
 - Using M8 media (LTO7 media formatted for LTO8 drives)
 - When available will purchase LTO8 media at 12TB/cart.
 - This will fill the remaining 1200 slots.
 - 16xTS1160 drives. 2250xJE media 45PB total (20TB/cart 400MB/sec).
 - Will initially be used for Jasmin/CEDA and IRIS data.
 - <https://www.scd.stfc.ac.uk/SiteAssets/Spectra%20Time%20Lapse%20Final.mp4>

- **CASTOR: tape-only service**
 - Disk-only service decommissioned.
 - New tape only endpoint WLCGTape
 - ~2PB cache with ~46PB useable

- **ECHO: disk-only service - expansion continues**
 - The largest CEPH Cluster currently in production
 - Now 180 storage nodes (from 30),
 - Useable space now 29PB/41PB (+16PB /+21PB)
 - A further 41 storage nodes to be added this year
 - Working on manageability and scalability of Echo

- **OpenNebular:**
 - Now decommissioned (April 2019)
- **OpenStack:**
 - Currently ~3500 cores, growing to ~8000 end May
- **Added**
 - Hypervisors: 108 Dell 6420 sleds (27 x 4-up 2U 6400 chassis)
 - Testing complete, about enter production
 - Cloud Storage: 12 Dell R730xd (12 bay 2U)
 - Testing complete, about enter production
 - Network:
 - 7 x Mellanox SN2100 16x100Gb port - Cumulus
- **Typical load**
 - ~600 VMs, currently quotas due to resource limits
 - Expect number increase sharply when new resources enter production

- Tier1 move from Hyper-V to VMware for core infrastructure
 - Migration now complete
- Oracle Databases
 - Plan to migrate to RH7 before ~~1 April 2018~~ 31 Dec 2018
 - Migration completed
- Wack-a-mole patching for the sons of Spectre/Meltdown et al.

- Migration of Nagios to Icinga
 - Work in progress
- On-going development of InfluxDB
 - Ongoing roll-out of our default time series database
 - Better monitoring of smaller VO's
 - Ganglia still scheduled for decommissioning (Dec 2019)
- Security Challenge started 2019-03-15
 - Yes, on a Friday afternoon!
 - Yes, challenge accepted!
 - Feedback due July 19

- Staff losses 18/19:
 - Production team
 - Gareth Smith - Happily retired!
 - Fabric
 - Chetan Walia

- Staff gains 18/19:
 - CEPH/Echo
 - Aidan McComb
 - Fabric/Cloud
 - Yakov Lisseev
 - Atlas Liaison
 - Stewart Martin-Haugh

