Computing
Particle Physics Annual Meeting
May 2024

Rob Fay, Mark Wong, David Hutchcroft

Who We Are

- Rob Fay

- Mark Wong – joined us in March

- David Hutchcroft (on the academic side of things)

- Carlos Chavez (just around to help out if needed)

What We Do

- **HEP and Grid Computing, in no particular order:**

Helpdesk: Online, Drop-in.
Accounts/Authentication: Account creation/deletion, LDAP, IPA, 2FA.
Storage: RAID, ZFS, Gluster, Backups.
Batch and Interactive: SLURM cluster, interactive nodes, GPGPUs: CUDA, Tensorflow.
Networking: Hardware, Management, Monitoring, Firewalls, IPv6.
Web Services: TWiki, Indico, Certs.
Collaboration Services: Gitlab, Mattermost, WISP, Vision.
Email: Webmail, Mailing Lists.
System Monitoring: Zabbix, Cacti, Ganglia, Security.
OS Support: Linux (CentOS, AlmaLinux), Windows, Mac.
Hardware: Procurement, Installs, Repairs, Machine Hosting, Data Centre Management, Stores.
Software: Installs, Licensing, Debugging, Virtual Machine Hosting, Containers, Puppet.
**Grid Computing:** CPU (140 nodes, >3000 cores) , Storage (~1PB), Clouds, Documentation.
And more!

How It's Going

- The usual:

  - The ever-increasing number of complex systems and services

  - Still doing the same work with relatively less, please continue to bear with us

  - **Julie Clark** helping with purchase and store of spare consumables

- Overall we have been able to keep things going well

How It's Going

- 472 helpdesk tickets in 2023

- A bit more than average

- Around 3.5 emails per ticket

- Please bear with us if your ticket is not answered immediately

Helpdesk Tickets
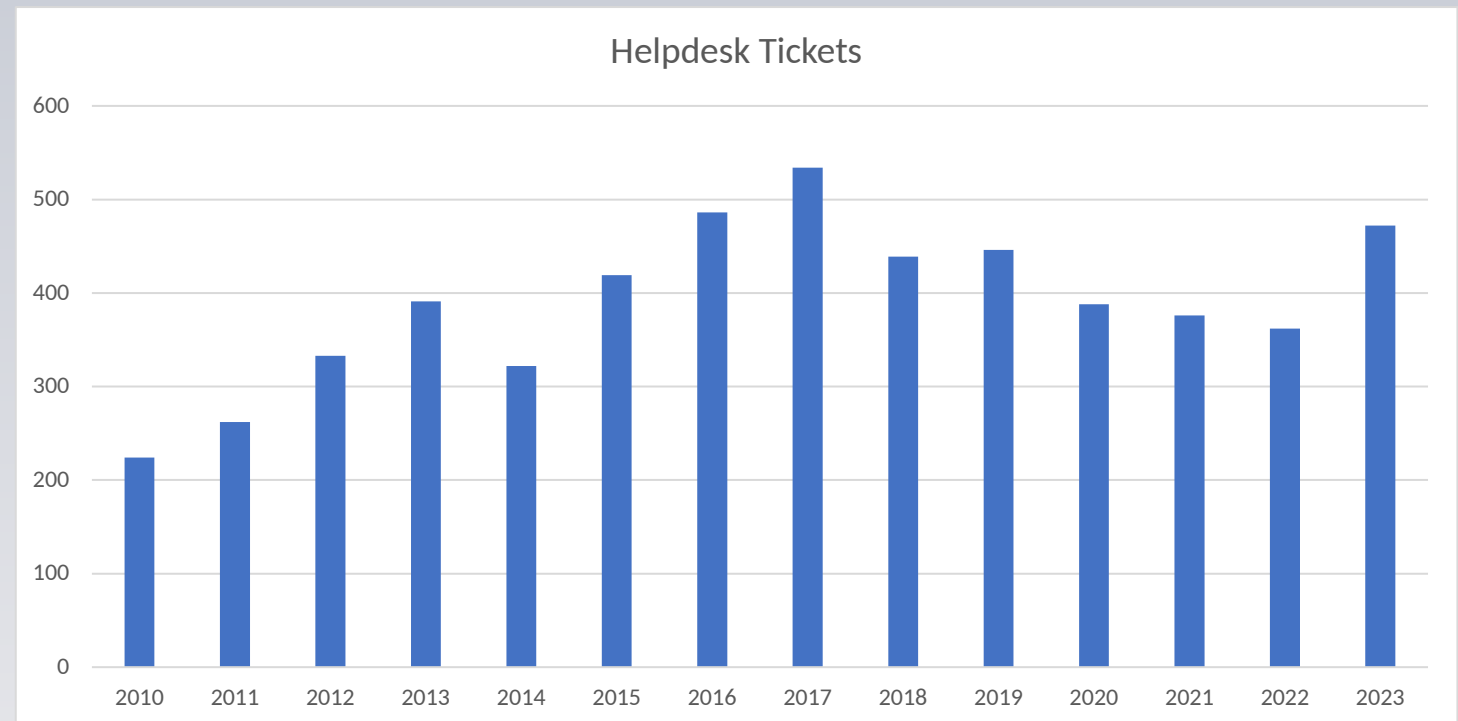
How It's Going – Network

- **Building Network**
  - New IT services network switches as of last year
  - Clean room ports now going through IT services switches as well
  - IPv6 enabled on cluster network but not on general building network
  - IT services plan to split network into VLANs
    - There are multiple IP ranges in use on the building network (138.253.48.0/24, 138.253.178.0/24 …), all in one VLAN
    - Plan to use multiple VLANs, one IP range per VLAN
    - Network ports will need to be assigned to the correct VLAN (automatically??)

How It's Going – Data Storage

■ Bundle (/bundle/data & /bundle/scratch)
 – Scaled, clustered, expandable file system
 – Good for large experiment data files , not so good for storing lots of small files
 – Due to (lack of) performance with small files, will be reviewing options
 – Still aiming to have a meeting with interested people about this

■ New Hepstore now in production!
 – Provides bulk, individually quota'd, resilient but not backed up storage
 – Default 500GB quota up from 300GB, increases available on request

How It's Going – Security

- Several other universities hacked
  - Typically 'ransomware' attacks; files are encrypted and held to ransom
  - Beware of fishing emails

- IT services regularly scan our network for security vulnerabilities
  - If you're managing a system, keep it up to date, keep us informed about who's looking after it
  - Let us know if you need any help with it

- Duo two-factor authentication (2FA) running on HEP SSH
  - If Duo isn't working, tell University IT services
  - If anything else is causing you problems, tell us
  - Remember your **HEP account** is independent from your University IT account

How It's Going — Operating Systems

- CentOS 7 reaches end-of-life at the end of June (next month!)
  - CentOS 7 systems will not be shut down immediately
  - But may need to be restricted if unpatched security vulnerabilities emerge

- Enter AlmaLinux!

How It's Going – Operating Systems

- AlmaLinux!
  - An alternative RHEL-based OS.
  - CERN and Fermilab also chose AlmaLinux
  - We've been using it for servers for two years now
  - Existing servers still being updated gradually, expect some disruption
  - AlmaLinux 9 interactive nodes available now (theta: general use, alpha: high-end GPU system)
  - Desktop build of AL9 available, request via helpdesk
  - Updating partly driven by demand; let us know:
    - When you need more AL9 resources
    - If you're going to need CentOS 7 for longer

Key Reminders

- **Passwords**
  - Still need to be sufficiently strong
  - That means not just common words
  - And not common words with numbers and/or an exclamation mark at the end

- **Pooling resources**
  - Julie Clark is taking care of purchasing consumables
  - We can try to help procure systems with limited funds and short notice
  - But the more notice the better
  - And where those limited funds can be combined, we can get better systems!

Key Reminders

- HEP accounts, systems, IT procurement, IT advice for HEP work :
- Helpdesk – helpdesk@hep.ph.liv.ac.uk
  - Talk to us!
  - The earlier projects and problems are raised, the better
  - If you are not sure –> ask us and we'll advise

- Twiki - https://hep.ph.liv.ac.uk/twiki
  - Most computing things are documented here

- Building network, eduroam and DUO problems
  - IT Services servicedesk@liverpool.ac.uk

Thank you!

- We used to say 'Merry Christmas' here back when this was in December

- But it's May

- So… enjoy the long weekend!

- Questions?