RAL Storage

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Contributions from Tier 1 (D Ross, A Sansum, S Traylen)
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Who we are

RAL – http://www.clrc.ac.uk/Activity/RAL;

GridPP – http://www.gridpp.ac.uk/

- GridPP Tier 1
    - http://www.gridpp.ac.uk/tier1a/

- GridPP Storage middleware group
    - Supporting deployment to T2s throughout UK
    - http://storage.esc.rl.ac.uk/

- RAL Atlas Datastore
    - http://www.e-science.clrc.ac.uk/web/services/datastore
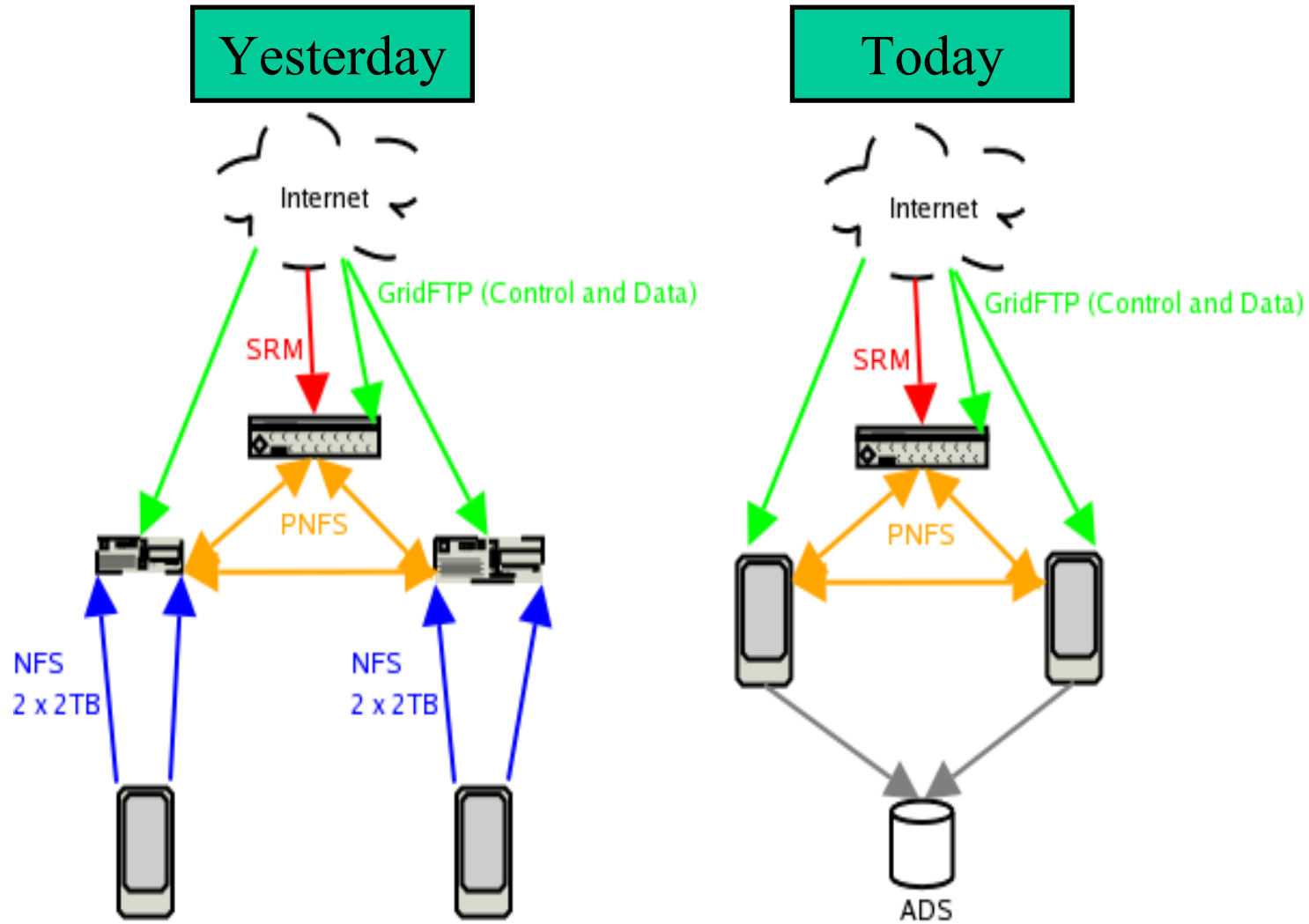
GridPP Storage Goals

- SRM 1 to tape and disk at Tier 1
- SRM 1 to disk at Tier 2s
- Disk pool management

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- SRB used for DC04
- SRB also currently used to tapestore
  - Used by many non-HEP experiments
- CMS and ATLAS now using the SRM to Tier 1

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Service Challenge 2

- Getting 75 MB/s from CERN
  - But seeing 3-3.5 Gb/s over LAN
  - Investigating…
- Lightpath
  - Got it at last moment
  - Underprovisioned?

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- ## GridPP Tier 1
  - Derek ROSS
  - Deployed three dCache-with-SRM
    - Production
    - Service Challenge
    - JRA1

- ## GridPP Storage
  - Owen SYNGE and Jiří MENCÁK
  - Deployed three dCache-with-SRM
    - Test
    - Test
    - Test

Current Deployment at RAL

CCLRC

GridPP
UK Computing for Particle Physics

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- Several Tier 2s installing dCache
  - Edinburgh
  - Manchester
  - Lancaster

- Planning to install
  - Imperial (London) (staff shortage)
  - RAL PP (due to start soon)

- Others have expressed interest

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T1 experiences

- ## Running production dCache
  - 25 TB disk
  - Interfaces to permanent disk
  - Interfaces to tape (dteam only atm) – no delete yet

- ## SC dCache
  - 4 disk servers
  - 13 GridFTP servers
  - Aggregated 500 MB/s

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T1 experiences – dCache

- Stability is good ☺

- Performance is good ☺
  - Optimising by adding more hardware
  - Head node, SRM, and SRM db all on different machines for SC2

- Satisfied with support from dCache ☺

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Operational problems, T1

- ## SRM requests left open
  - If interrupted, lcg-gt leaves requests open
  - Users must call lcg-sd to close
- ## Running dCache GridFTP on multihomed host
  - TURL points to default IP address
- ## Some minor VO related problems
  - E.g. total available space published, not space per VO

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Other storage work

- One size doesn't necessarily fit all…
  - Investigating DPM (result next week)…
  - xrootd… (BaBar using it)
- Collaborating with CASTOR group
- Own SRM implementation
- RAL Tapestore plans
  - Investigating running CASTOR
  - …or need to upgrade current software

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Summary

- dCache
  - currently managing access to storage at Tier 1
  - Deployed or deploying to 4-5 major T2 sites
- Interfacing to disks and tape at RAL
  - But tape only opened for dteam right now

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