LPC Data Organization

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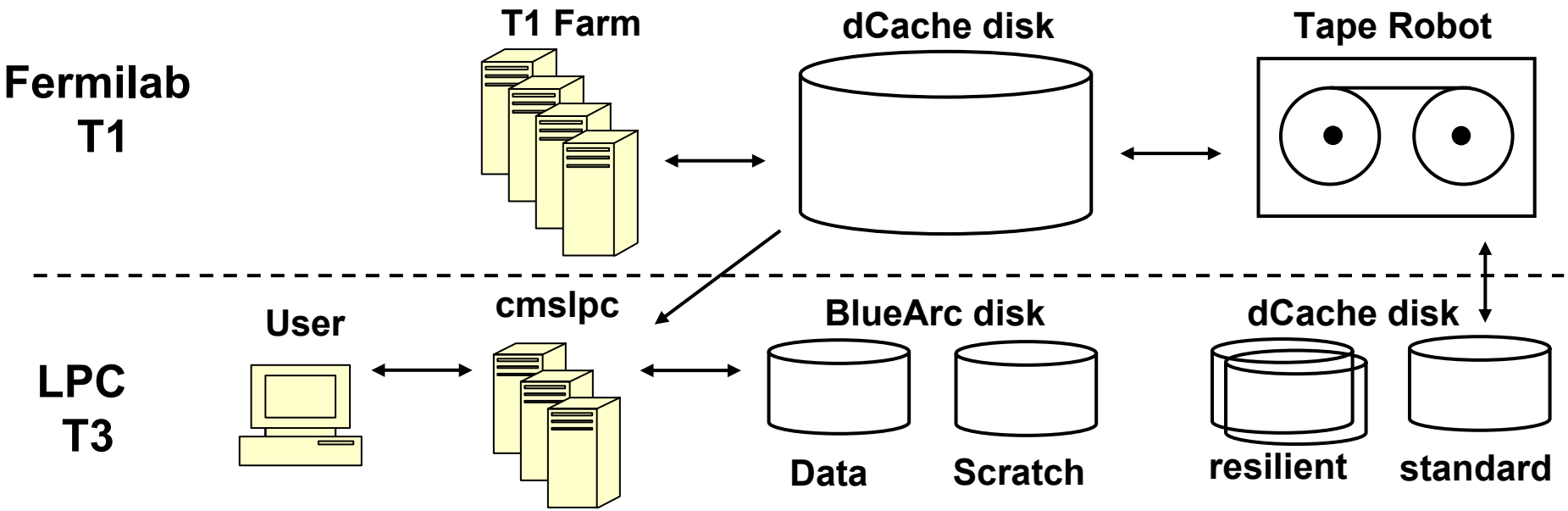
Introduction

- LPC has dedicated data management resources
  - Distinct from the Fermilab T1
- Here we give a brief overview of those resources
  - The “type” and amount of disk
  - How it can be accessed and used
- Begin the discussion of how to allocate the resources
  - Present the initial plans of LPC and computing management
  - Solicit the input of the LPC users and USCMS
- These are your resources and we want your input
  - What are your data management needs and issues at the LPC ?

T1 and LPC Disk Use



- T1 data storage resources are transparently available to LPC users
  - Cmslpc can access data on T1 disk via dCache. Available for analysis.

- Dedicated LPC disk resources come in multiple types
  - BlueArc disk: not backed-up but easy to use and to allocate to users and physics groups.
  - dCache disk:
    - Resilient dCache: protected by 2nd copy on disk (resilient). Able to hold small user files.
    - Standard dCache: proetcted on tape, but only for data samples with large files (semi-official data).

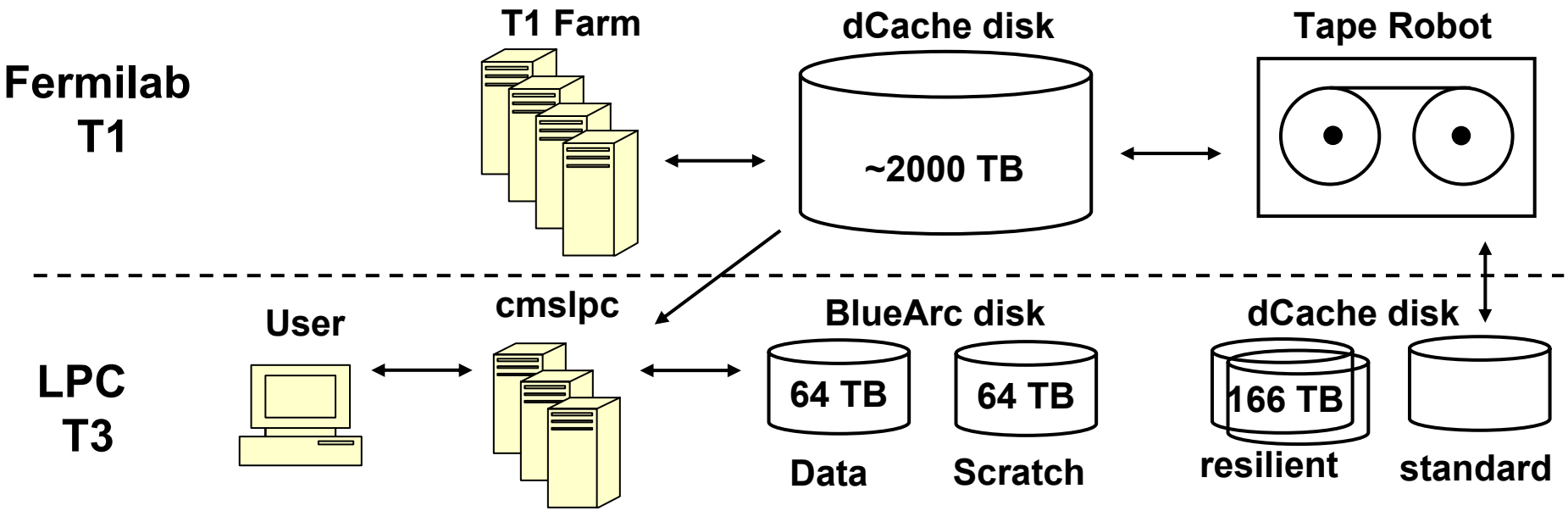
dCache data pinned on disk

- dCache is normally a disk cached system of tape access.
  - Data goes to and from tape through a disk cache.
    - Data does not “stay” on disk normally.
  - Recently accessed data is often on disk and accessible quickly
    - Older data will often take longer to access off of tape.

- dCache data can be pinned on disk.
  - The data will then stay on disk for the lifetime of the pin.
  - dCache access then does not have any delays from tape access.
    - Data is still protected by being on tape.

- We can pin critical datasets on disk for access w/o tape delay.

T1 and LPC Disk Currently



- T1 disk (2 PB) can hold all AOD and FEVT 2008 run data pinned on disk.
  - LPC users can then transparently access all data (AOD, FEVT) on disk quickly.
- LPC disk for user data and MC is now 128 TB not counting resilient dCache
  - Data: /uscms_data/d1 is 64 TB, 11 used, and 51 allocated. 20 GB/user default
  - Scratch: /uscmst1b_scratch/lpc is 64 TB, 51 used, no quotas.
  - Resilient dCache: 166 TB, 86 used (holds 43), 80 available. No quotas now.

LPC disk use proposal

- The LPC disk will grow significantly to reach TDR goal of 1 TB / year / user
  - Current plans are to add 384 TB.
- BlueArc
  - The data area would be tripled from 64 to 192 TB.
    - 64 additional TB for physics groups.
    - 64 additional TB for users.
  - Up to 1 TB / user on request
    - With the default for users increasing from 20 GB to 100 GB
  - The scratch disk size remains 64 TB
- dCache
  - Tape-backed dCache with up to 256 TB pinned on disk for rapid access
    - Physics group and user skims, compressed datasets, and MC datasets.
  - Resilient dCache remains 166 TB with quotas of 1 TB/user soon.
- In this proposal all users get a lot more disk
  - All users get 100 GB in BlueArc, 1 TB on request. 1 TB/user resilient dCache.
  - Datasets larger than this would be in dCache backed to tape.

Conclusions

- We should have plenty of disk for the 2008 run
  - Run AOD and FEVT data should be pinned on disk on T1
    - Transparently accessible from the LPC
  - Other priority datasets can be pinned on disk at the LPC
    - Priority skims, compressed datasets, MC datasets.
- We will have a lot of disk for LPC users
  - More than half a PByte for user files and datasets.
- We've presented some initial plans
  - We welcome your comments.

Backup Slides

Data Management Issues

- Data Transfers
  - Users may request transfers of datasets to the LPC
    - Currently they go to the T1, but in the future they will go to the LPC.
    - Transfers now go into dCache backed by tape.
    - Transfers must be approved by data manager. Rejection criteria?

- Users writing to dCache
  - Users can only write to resilient dCache
    - Avoids writing of small files to tape robot which hurts tape drives.
    - Currently mostly done via CRAB.
    - Grid credentials required for writing of files via SRMCP.
      - **Higher "barrier to entry" may be a good thing.**
  - "Official" datasets can be migrated to tape-backed dCache.