Storage at CCIN2P3

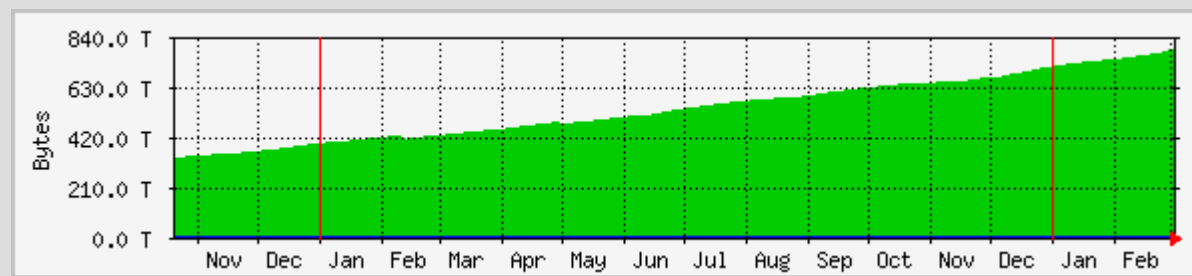Lionel Schwarz <schwarz@cc.in2p3.fr>

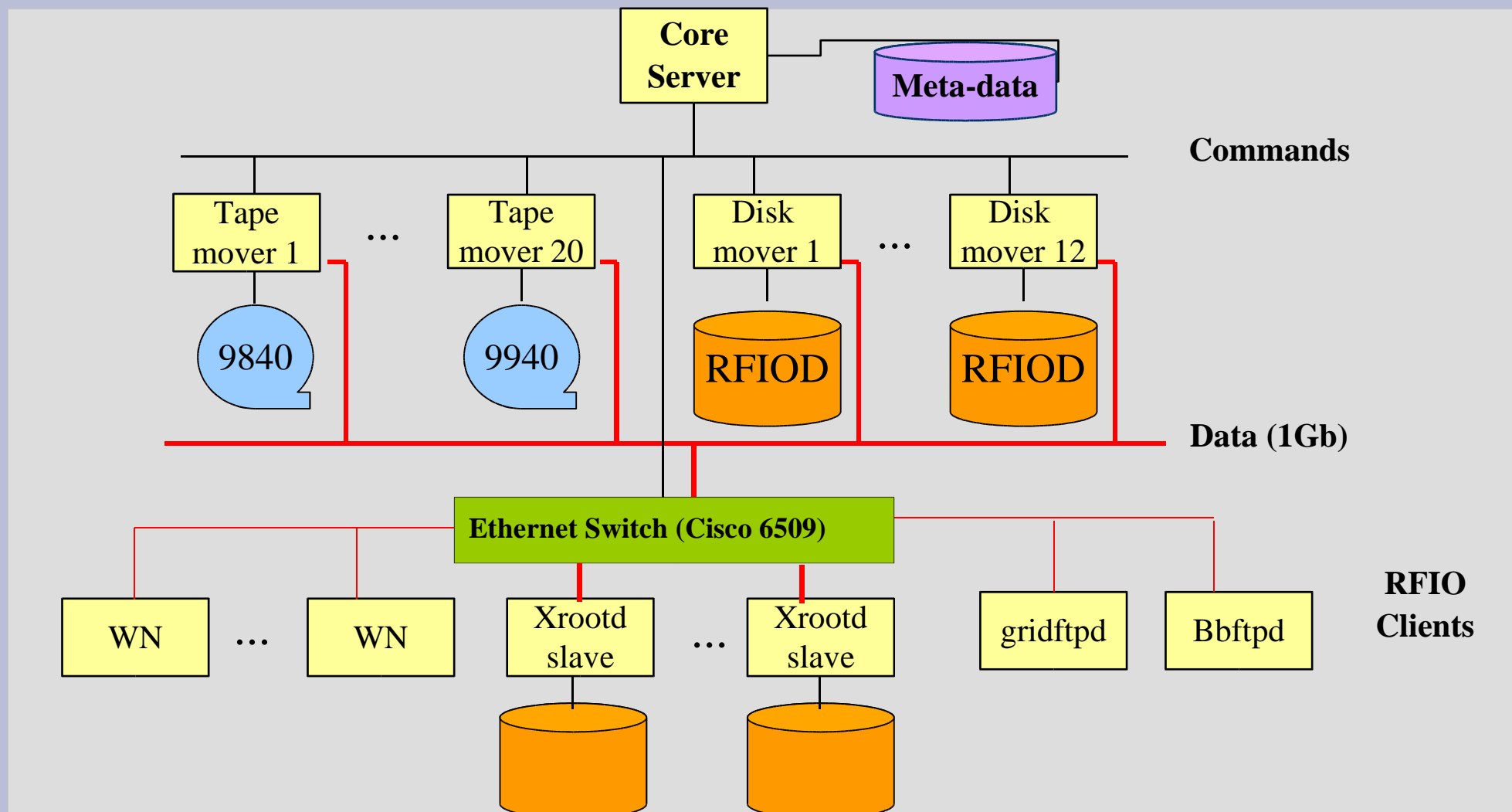# Distributed storage overview

- AFS
  - users' homes
  - groups' repositories
- Mass Storage in HPSS (800TB by now)
- Xrootd connected to HPSS (40TB)
- "semi-permanent" storage served by 15 NFS servers (30TB)
  - Intensive I/O on relatively small files not well addressed by HPSS
  - But this solution is not scalable enough
- Backup in TSM

HPSS at CCIN2P3

- ## Classes of service (COS)
  - Customization: types of drives, dedicated cache disk...
  - COS 1 (tape-only): HPSS disk is not used
- ## Local access is given via RFIO (and not pFTP)
  - RFIO servers are "distributed" amongst experiments
  - `rfcp /tmp/file cchpsscms:/hpss/in2p3.fr/group/...`
- ## Remote access by bbFTP, GridFTP, SRB

HPSS setup

Which SRM for CCIN2P3 ?

- We need an SRM that allows to:
    - Easily link with HPSS via RFIO
    - Use different COS
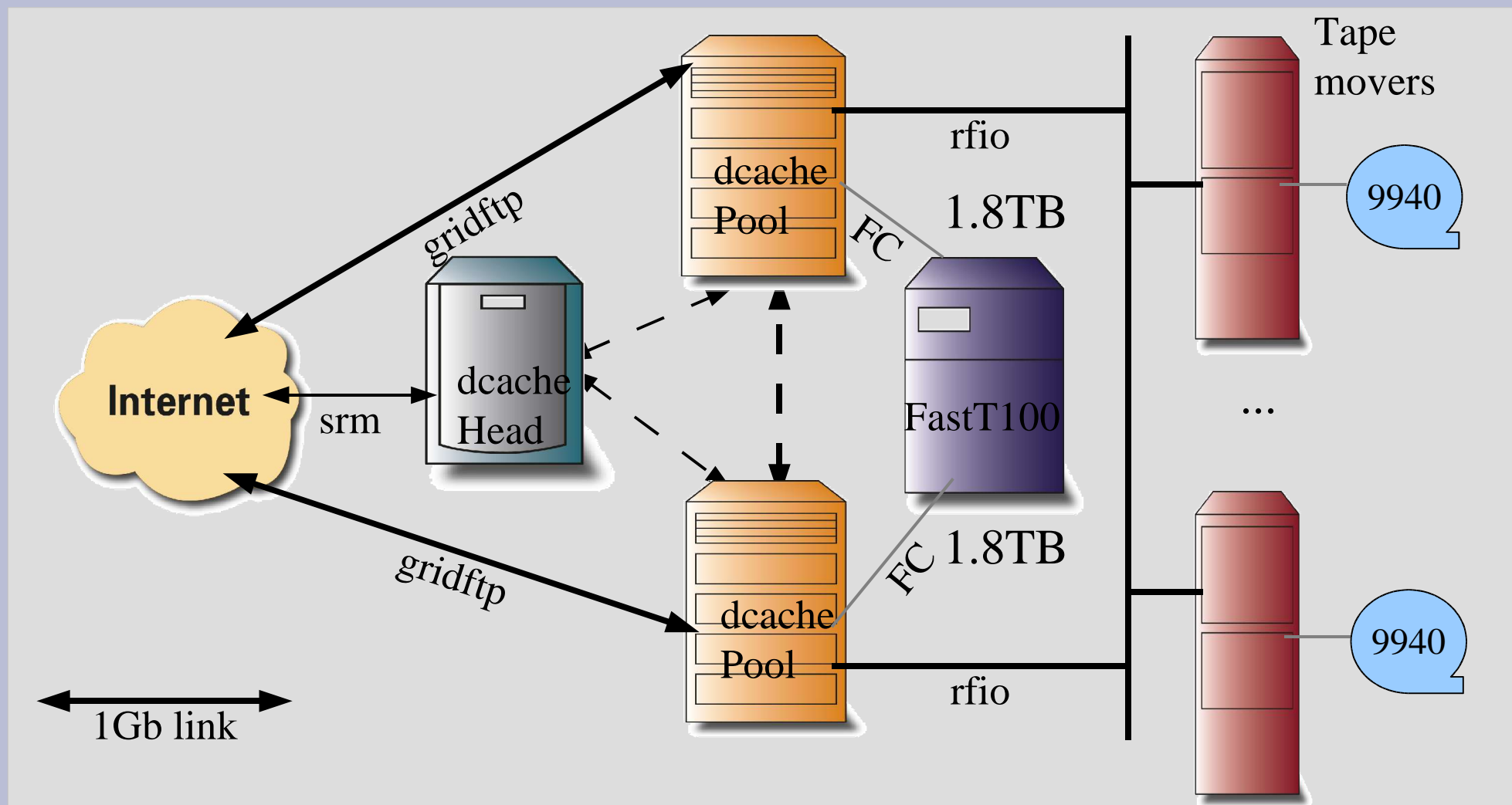- We don't need disk management (HPSS has its own disk)

The dCache solution

- We have tested LBNL's HRM for HPSS v1.2
  - They use pFTP as the HPSS link
  - Difficult to integrate RFIO
- Why not writing our own SRM?
  - No human resources
- dCache appeared to be the only solution
  - It manages disk but we can use "tape-only" COS
  - It provides easy HSM link integration (shell script)
  - It allows many parameters to this link
  - It has been in production for a while
  - It is used by a large community

dCache and HPSS

- ## Files are stored with their physical names
  - File with logical name `"/dcache/cms/afile"` is stored as `"/hpss/dcache/cms/000100000000000000002AF0"`
- ## Files stored on behalf of a generic user (per VO)
  - /dcache/cms => `su -c "rfcp ... " cmsgrid`
- ## COS and RFIO server depend on dCache path
  - /dcache/cms => RFIO server=cchpsscms, COS=25
- ## Deletion of a dCache file
  - Implemented as a cron job scanning the dCache "Trash" directory and deleting each file on HPSS on behalf of the generic user

SC3 storage (current) setup

SC3 status at CCIN2P3

SC3 throughput phase	July 4-July 30
Network reconfiguration	04/12/05
New head Node (dCache core + SRM): more disk, more CPU	Mid April
2 Pool nodes (+ GridFTP): setup	√
1 additional pool node (+GridFTP): setup	Mid April
HPSS configuration (Tape-only COS)	√
Performances and tuning	In progress
Transfers Client CERN – SRM CCIN2P3	To be defined