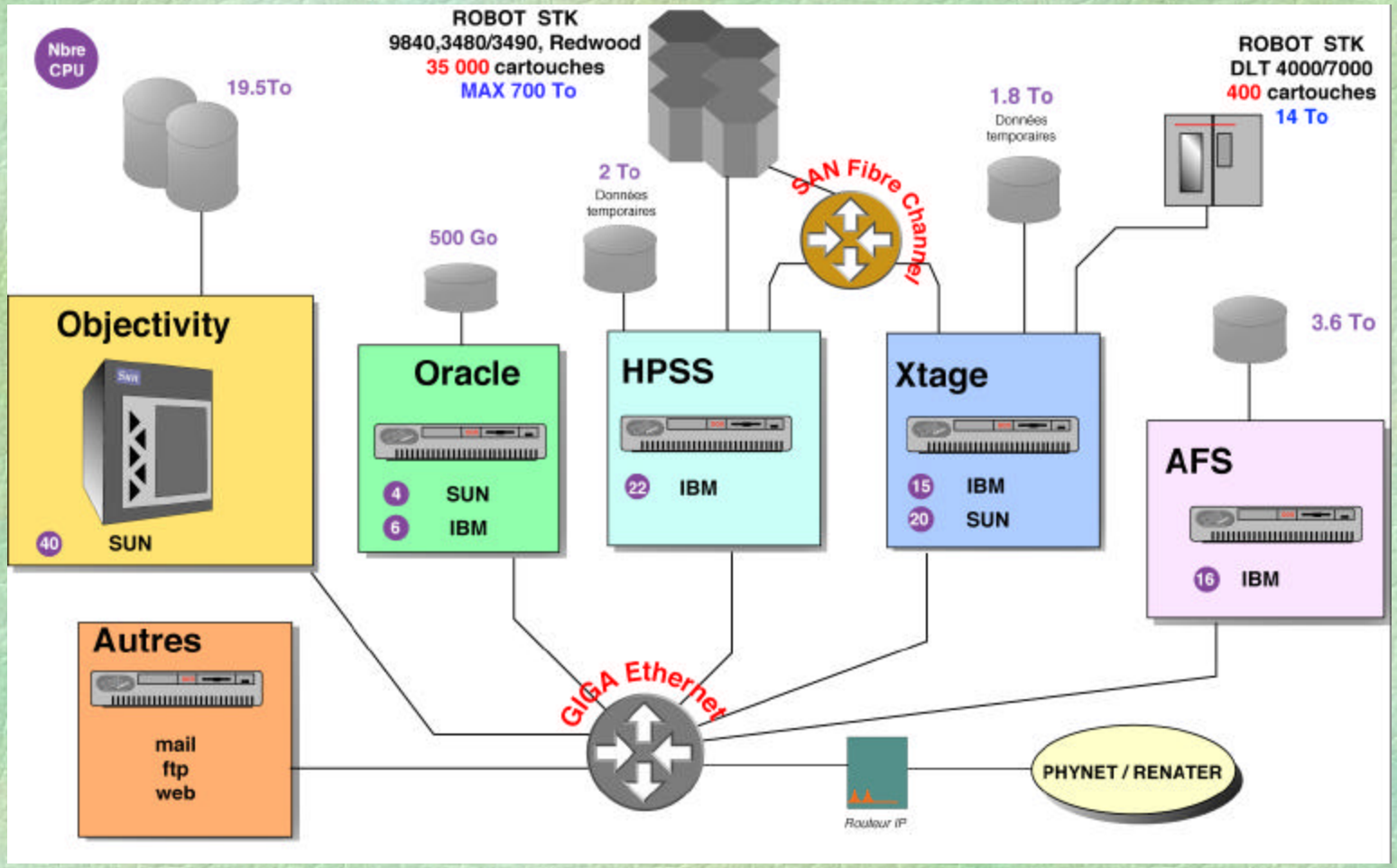
SAM at CCIN2P3 configuration issues

Patrice Lebrun - IPNL/IN2P3

CCIN2P3 present actions

- Computing and data storage services for about 45 experiments
- Regional Center services for:
  - EROS II
  - BaBar (→ Tier A)
  - D0 ...
  - AUGER
  - LHC

CCIN2P3 services



Linux Workers

- 16 GB of SCSI disk/worker with 2 GB/CPU for scratch
- Fast Internet 100 Mb/s

Linux (RedHat 6.1) -> 96 dual PIII 750MHz + 100 dual PIII 1GHz
From Now Half of them are upgraded to RedHat 7.2

28 dual PIII 1.3 GHz will be installed on September 2002

Networking

- Academic public network “Renater 2” based on virtual networking (ATM) with guaranteed bandwidth (VPN on ATM)
- Lyon ←→ CERN at 155 Mb
- Lyon ←→ US is going through CERN
  - ✓Bottleneck FNAL ←→ Chicago (~ 30 Mb/s)
- Lyon ←→ STARtap at 100 Mb, STARtap to Esnet at 50 Mb (for BaBar).

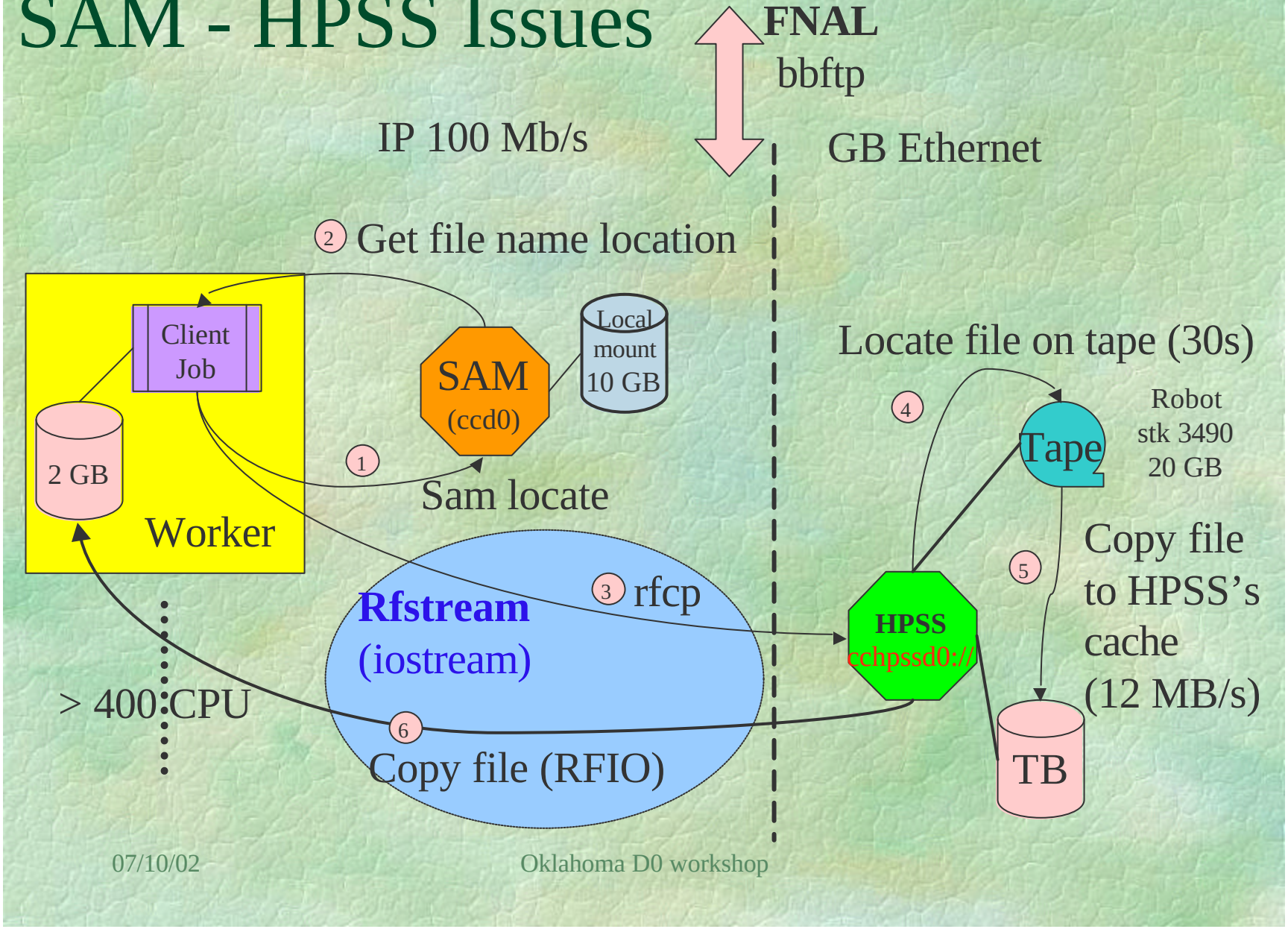
HPSS (**H**igh **P**erformance **S**torage **S**ystem)

- HPSS – local developments:
  - Interface with RFIO:
    - ✓API: C, Fortran (via cfio)
    - ✓API: C++ (iostream) (for gcc and KCC)
    - ✓Development of RFIO 64bits will be implemented in HPSS
    - ✓bbftp – secure parallel ftp using RFIO interface
- HPSS and D0
  - 800 GB of Cache disk (could be larger in future)
  - About 8 TB stored (MC and Imported Data)

SAM Stations

- Two SAM stations
  - ✓Dual PIII 1 GHz with 1 GB of memory
    - RedHat 6.1
  - ✓Administrators: L. Duflot and P. Lebrun
  - ✓Version: v4_1_0 Flavor: Linux+2.2
  - ✓ccin2p3-analysis (general purpose)
  - ✓ccin2p3-production (dedicated to MC production)
    - Used to store files at FNAL
    - bbftp recompiled at Lyon with RFIO
  - ✓Actual limit of space for SAM cache is 10 GB and not seen by other computers. (Not used)

SAM - HPSS Issues



Comments

- Advantages
  - ✓low cost (man power, hardware ...)
  - ✓efficiency (high number of workers and jobs)
  - ✓low maintenance (no daemon running (SAM) and/or no mount (NFS) on each worker)
- Disadvantages
  - ✓No optimization performed by SAM but only by HPSS (no physics oriented)
  - ✓any other ?...

Some words about SAM Store is done

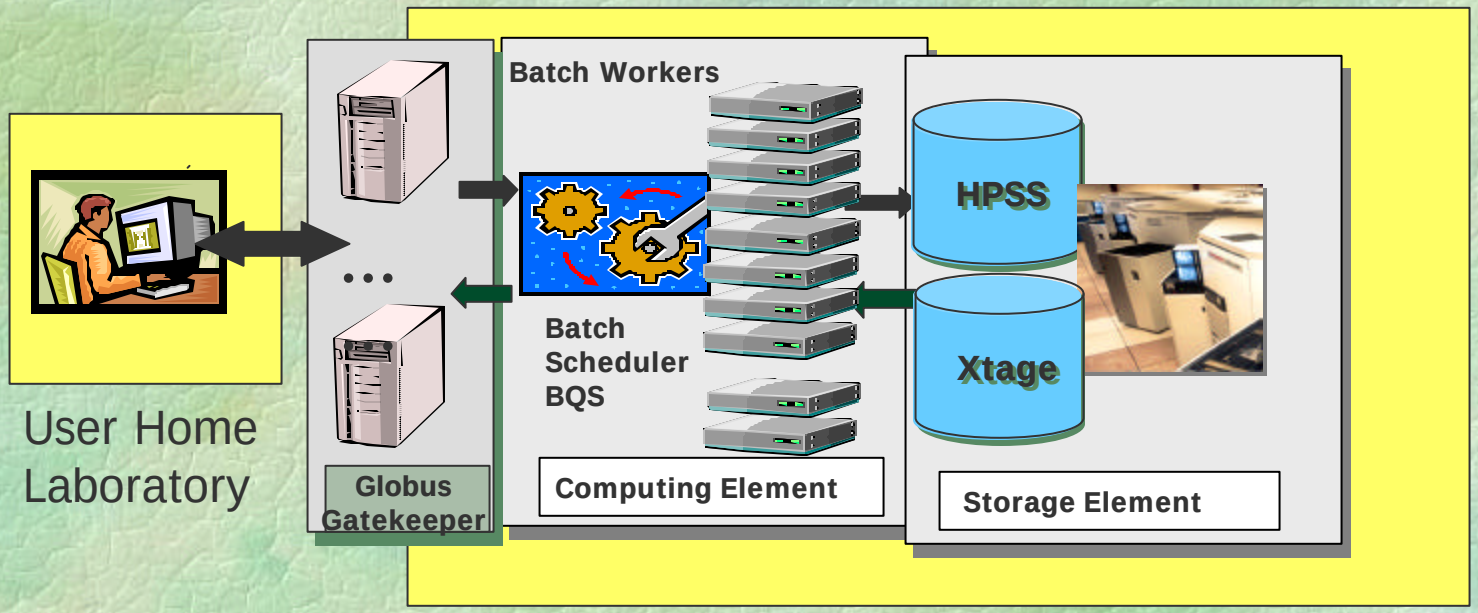
- Copy file from HPSS on local disk by rfcp
  - ✓ **rfcp cchpssd0.in2p3.fr**:/hpss/in2p3.fr/group/d0/mcprod/rec_filename /d0cache/import/
  - ✓ cp /<path>/import_description_file /d0cache/import
  - ✓ cd /d0cache/import
  - ✓ sam store --source=. --descrip=import_description_file
  - ✓ rm -f * (clean buffer)
- If SAM gives only the file location
  - ✓BBFTP can read file directly from HPSS
  - ✓Problem with the Import description file which has to be on the same directory where the storing file is !
    - To SAM experts : is true or false ?

Work to do

- D0 code is not touched:
  - Implementation in rfstream class only
    - ✓Mode 1 (copy on local disk)
      - check space on local disk
      - rfcp (rfio copy) from HPSS and open file locally
      - close and remove file from disk
    - ✓Mode 2
      - open and read file using API directly from HPSS (but 5 times slower than mode 1)
- SAM requirement
  - ✓has to return only the file name location without any check on the file (performed by HPSS) when file is located in HPPS (cchpssd0 server)
  - ✓Exportation from FNAL to CCIN2P3 has to be investigated

DATA GRID

Testbed is involved in the frame of WP6 (DataGRID)
Participation in WPx groups (x=8,7,9,10)
Integration of BQS batch system into Globus



Conclusion

- D0 code not changed
  - ✓only ccin2p3 iostream are modified
- SAM has to see cchpssd0 (HPSS server) like a local disk.
- Files should be accessed locally after an RFIO copy (mode 1) or open and read using API (mode 2)
- Need help from a SAM expert
- Hope to do some tests in September
- SAM with Data Grid should be also tested (D0GRID) at the CCIN2P3