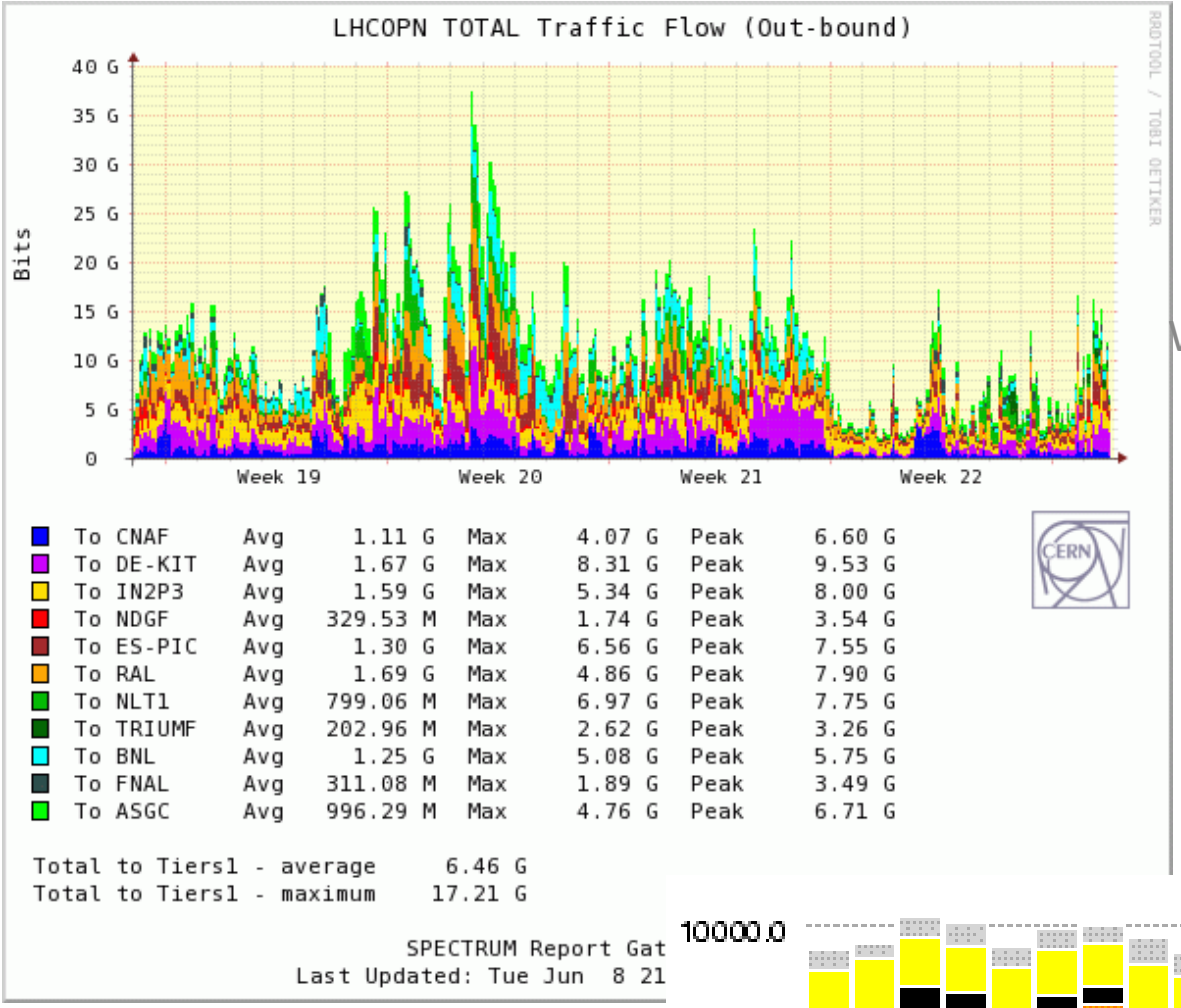
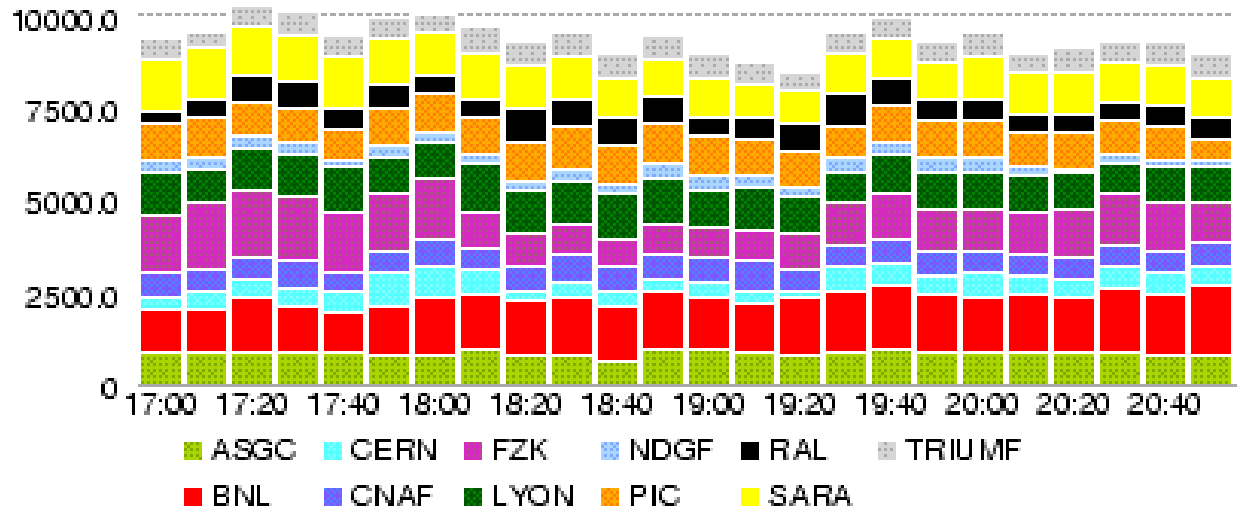
The Network & ATLAS

Workshop on transatlantic networking panel discussion
CERN, June 11 2010

Kors Bos,
CERN, Geneva & NIKHEF, Amsterdam
(ATLAS Computing Coordinator)





At present, institutes in Europe typically have a $\sim$ 1 Mb/s access to CERN. In some places the available bandwidth is already as high as 622 Mb/s. We expect Gb/s networks to be available by the beginning of LHC operation. This assumes an increase of a factor of $\sim$ 100, which is typical of the improvements in the technology over a ten-year period. However, current price trends would imply that achieving this performance would require an increase in network funding.

CERN/LHCC/94 43
LHCC/P2
15 December 1994

Technical Proposal

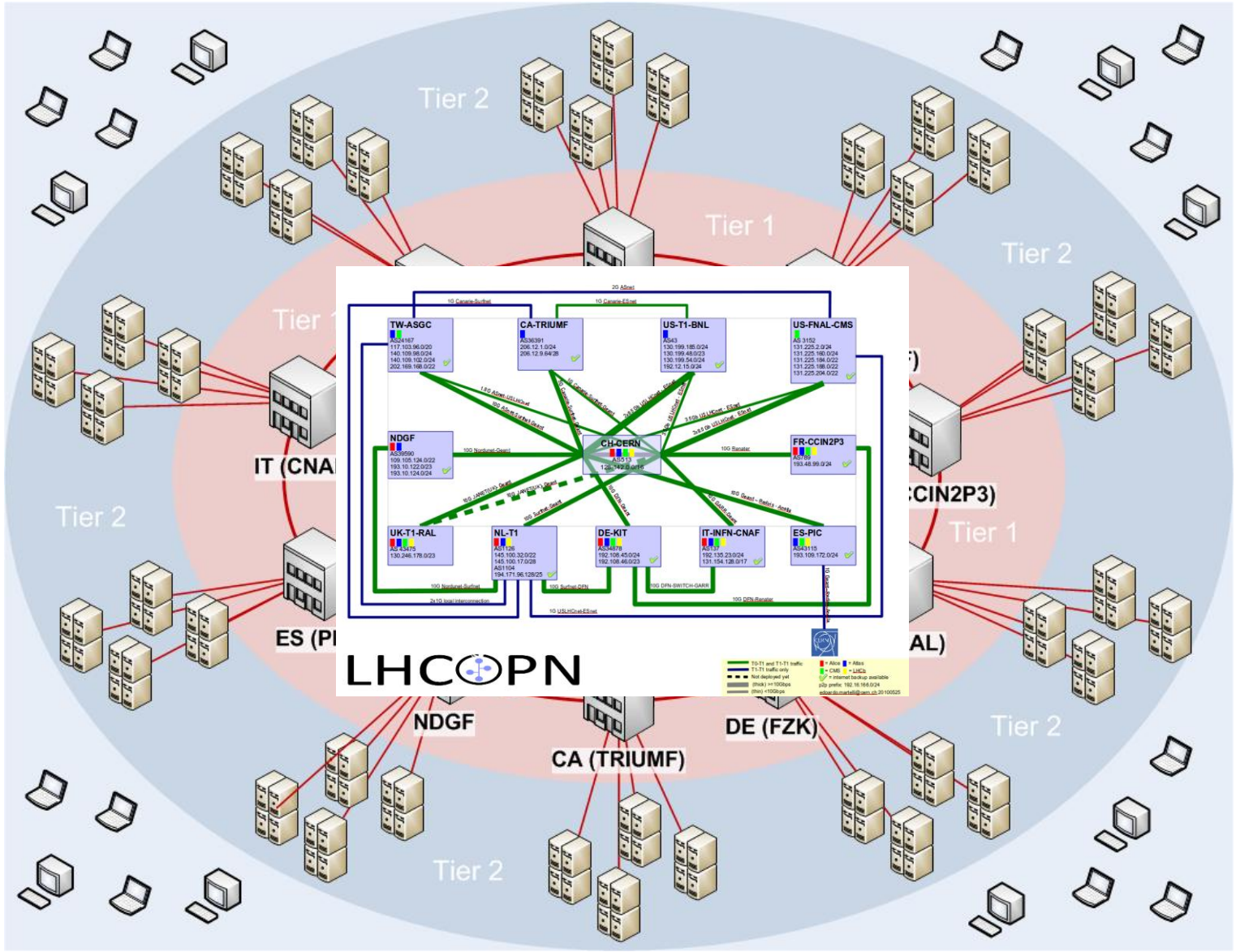
for a

General-Purpose pp Experiment

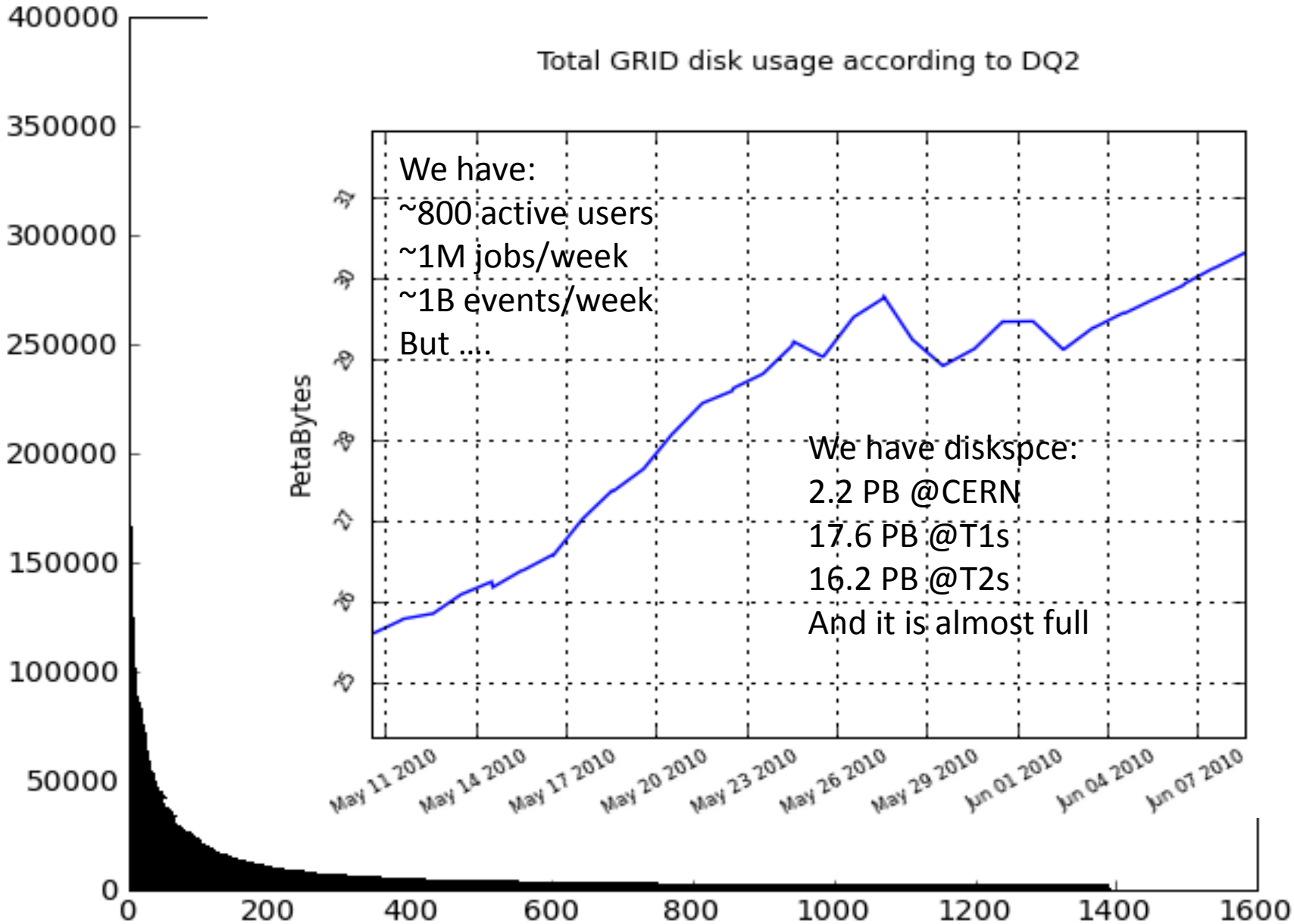
at the

Large Hadron Collider at CERN

Data Placement Hierarchy



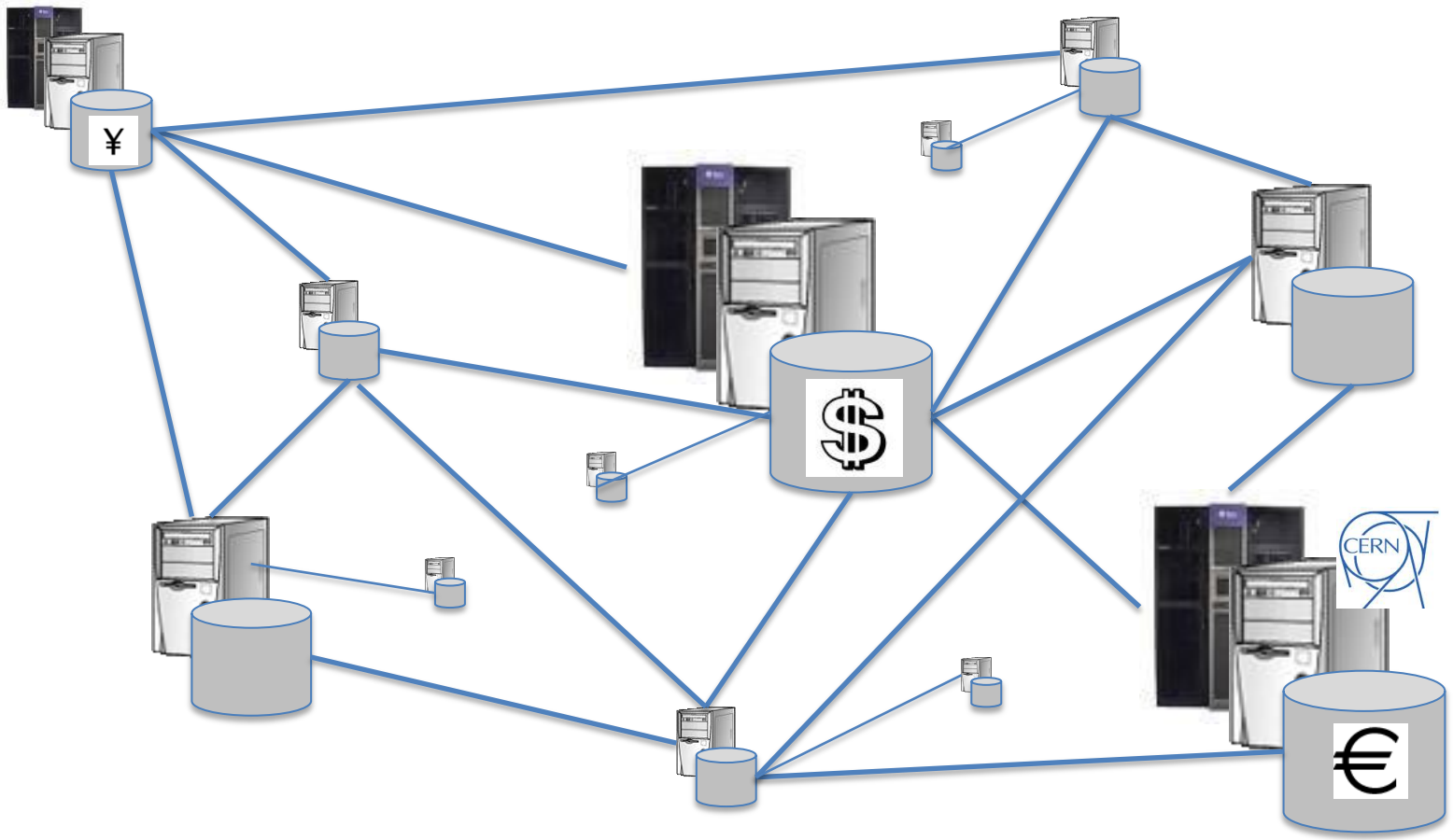
Data placement & usage



Alternative: more caching and less pre-placement

- Pull needed data to where there is free CPU power
- Get the data from the “best” site(s)
  - Network should know what is “best”
- Retire least frequently used data
- Dynamically makes most popular data available
- Across cloud boundaries

Network of sites with a big cache
Few sites equipped to archive data
Latency may favor continents view



Evolution of requirements

- No longer T0-1-2-3 hierarchy
- T1 and T2 will become equivalent in the network (OPNng)
- Traffic between countries as much as within
- No longer disk space but network bandwidth will scale with #users and #data
- More analysis-user demand driven traffic pattern rather than the DC of pre-placement
- We must have intelligent layer for data brokering
- Bandwidth between each of the sites must be at least what we now have between a T1 and T2 site within a cloud