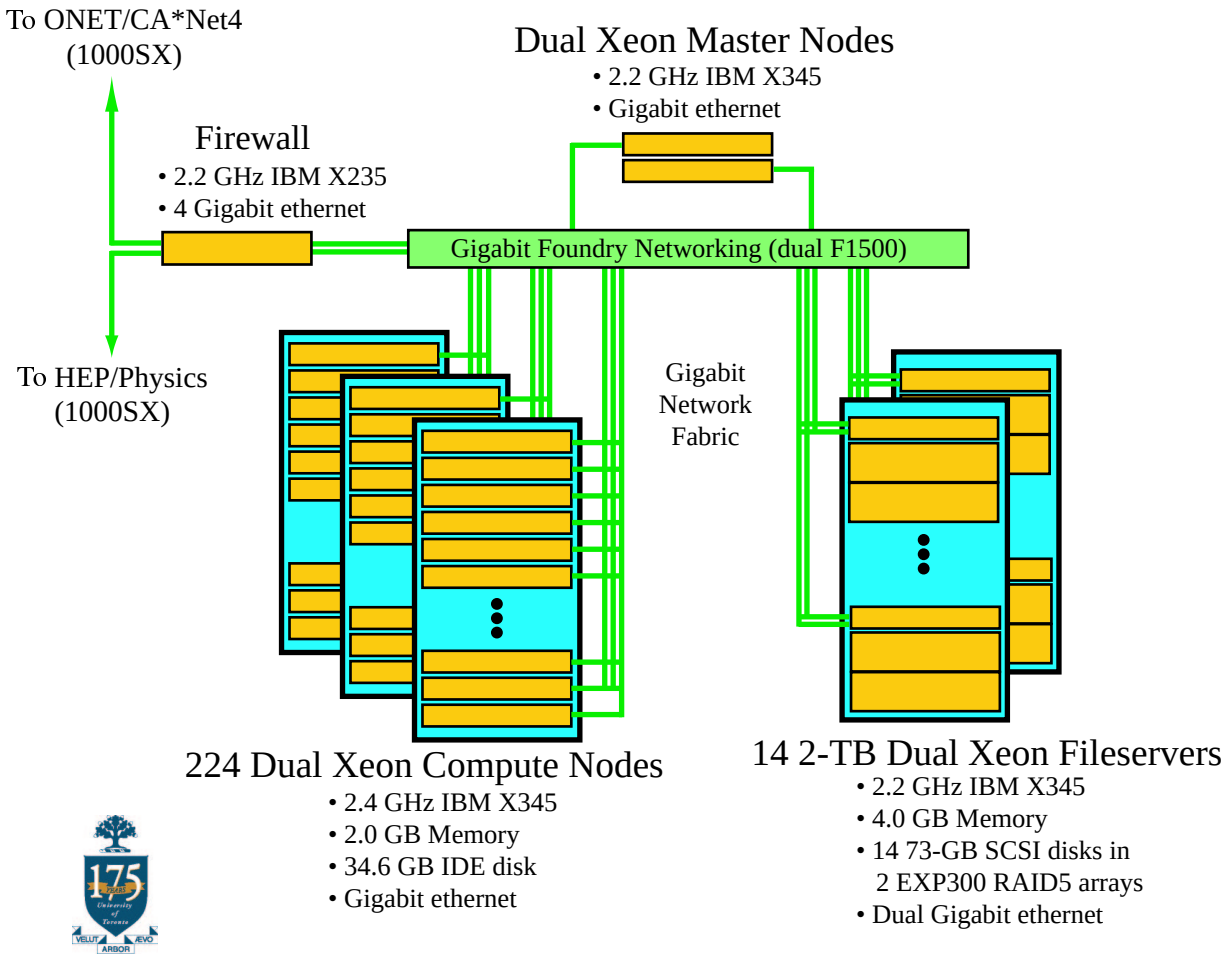
Toronto Cluster Status
(a.k.a. BIGMAC)

R. Tafirout

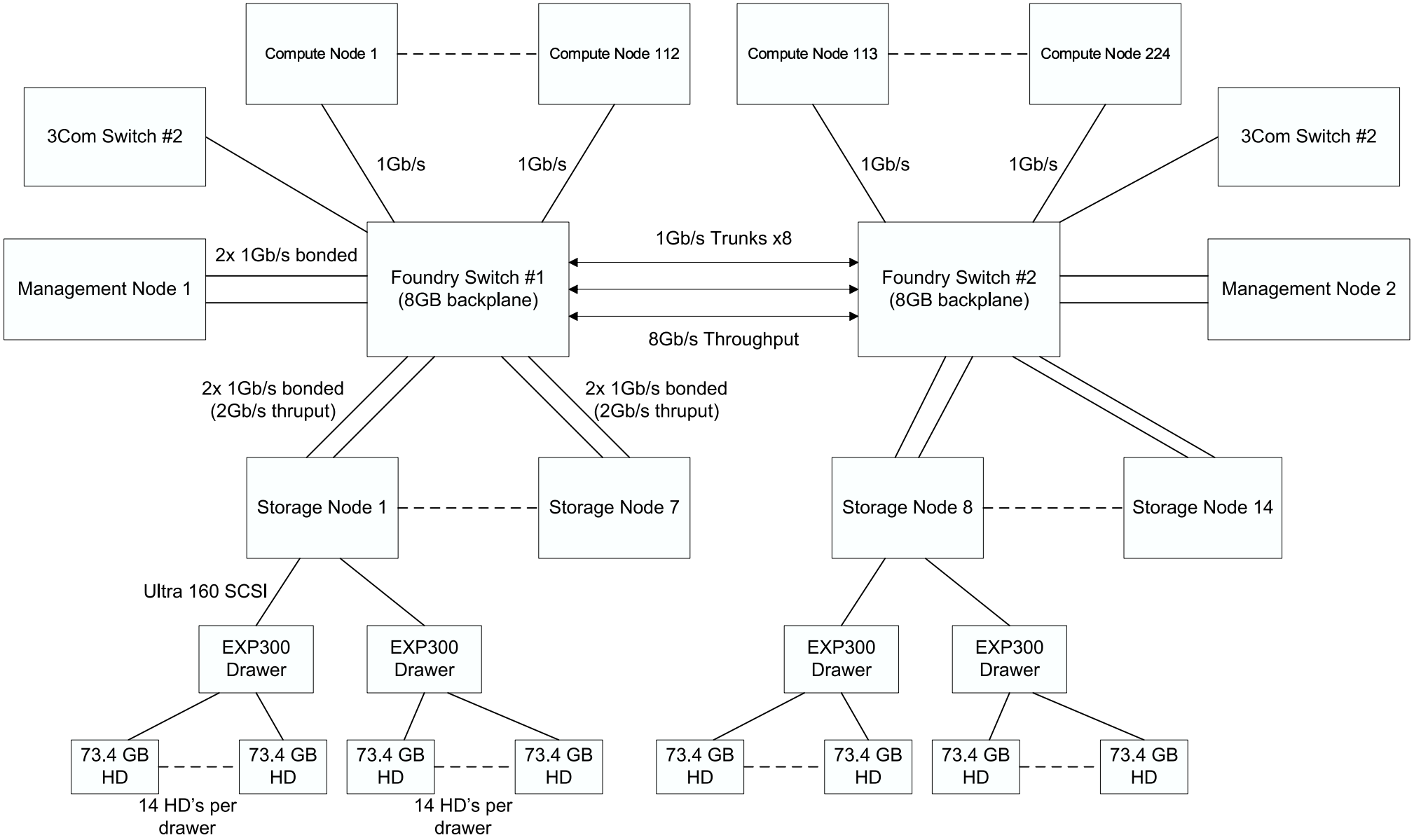
Monte Carlo Workshop, Toronto, April 15 2003



15 Sep 02

Physics Parallel Computing Cluster
at the University of Toronto

Cluster Logical Diagram



Hardware status:

- cluster is fully assembled (in room MP 341)
- up and running (except few nodes)
- fully networked (seen by/sees the outside world)
- 8 computing nodes are not accessible
  (faulty slot in foundry chassis)
- 28 TB of disk partitioned

Software status:

- RedHat 7.3, Kernel 2.4.18-27.7.xsmp
  (Xeon hyperthreading support)
- IBM cluster tools
  (for parallel execution of commands)
- no batch system yet
- no CDF software yet

Burning/Acceptance tests:

- IBM tests (consist of various stages)
- CDF tests (simulation software)

IBM tests:

- I/O tests between various components
- SETI @ home (with 4 processes/node)

Last week, IBM completed all their tests $\boxed{\surd}$

CDF tests:

- run CDF simulation jobs on the entire cluster (with 2 jobs/node)
- using official runMC package with few changes:
  - disable database access to FNAL
  - few banks dropped to stay below 2 Gb (file size limit for ROOT)
- each job consist of:
  - Pythia 17200 events ($\sim$ 72 Hrs)
  - $\sim$ 1.25 Gb of output
  - Edm_ObjectLister on output file
  - md5sum on list of objects
- compare md5sum's of all jobs

Benchmarking (SimulationControlMod):

- 23.58 ± 0.14 (1 GHz machine / 256 KB cache)
- 19.30 ± 0.12 (1.13 GHz machine / 512 KB cache)
- 14.56 ± 0.04 (2.2 GHz / 512 KB cache)
- 13.41 ± 0.03 (2.4 GHz / 512 KB cache)

CDF tests started last Friday:

432 jobs were submitted (8 nodes were not accessible)

more than 40% of the jobs were running $>$50% slower. Hyper-threading seems to be the problem. The kernel seems to pack two jobs on the same physical CPU causing a loss of performance. Need to investigate more on this and fix the problem.

$\rightarrow$ so far 224 jobs completed successfully, giving identical outputs.

Todo list (starting this week):

- coreFUI (Fermi User environment) installation
- Kerberos utilities
- CDF Softwares installation
- Batch system (FBSNG) installation/configuration

Near term:

- ready for large scale CDF MC productions

Long term:

- participation in CDF/GRID project