IPP Canada Remote Computing Plans

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IPP Canada
CDF Computing

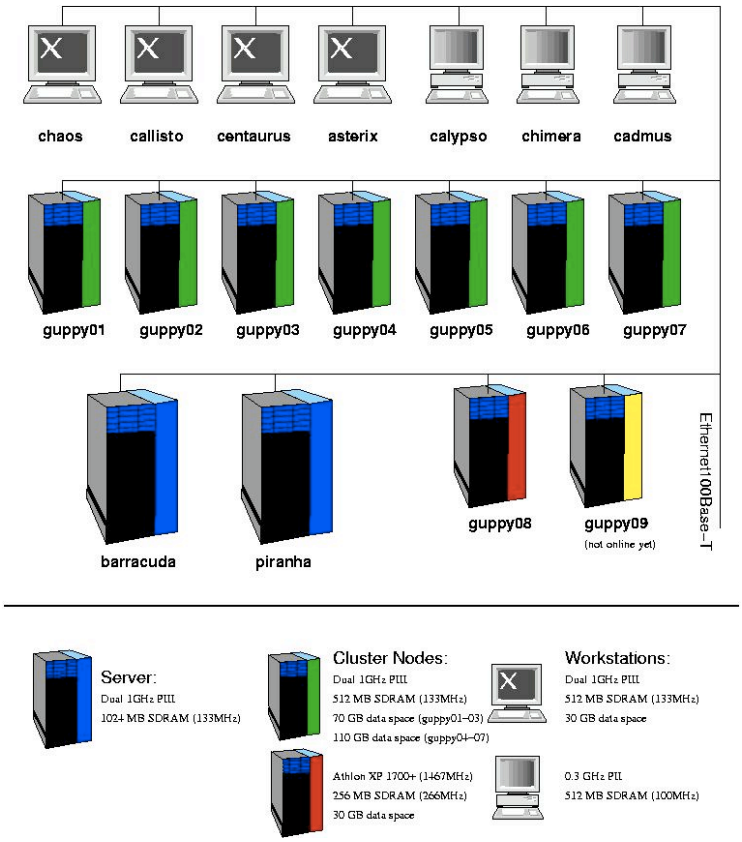
- **IPP Canada is comprised of Universities of Alberta & Toronto**
  - **Groups work closely, supported from common operating grant**
    - Five faculty, nine students, 2 PDF's
- **Local computing infrastructure**
  - **Linux workstations & farm clusters**
  - **Technical support available**
- **Involved in offline computing**
  - **CAL, CES, jets & missing E_T**
  - **Calorimeter simulation & validation**
- **Analysis efforts involving**
  - **Top mass, production, ttH**
  - **CP Violation**
  - **Exotics Searches**

IPP Analysis Model

- **Analysis model:**
  - **Physicist work locally**
    - Local infrastructure for interactive analysis, MC production
  - **FNAL computing**
    - Data access, creation of smaller datasets, network transport off-site
- **Requirements**
  - **Good interactive computing**
    - Dual P3/P4 workstations
    - Access to CPU resources for analysis tasks (20-30 processors)
    - Multi-TB data storage
  - **Computing resources for large MC production and high-throughput analysis**
  - **High-speed connectivity to FNAL**
  - **See GRID as long-term solution**

Toronto Interactive Computing

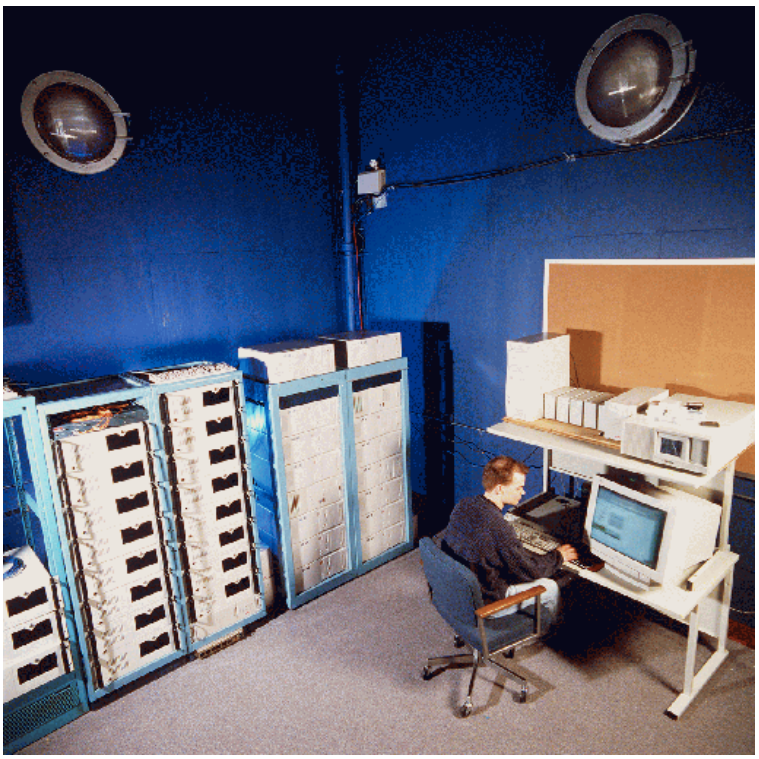
- **Have interactive "fish" cluster**
  - **Worker nodes (8) and w/s (12)**
    - Mostly 1.0 GHz dual P3's, 2GB memory, 30-40 GB IDE disk
  - **Disk space of 1.0TB**
    - All NFS auto-mounted



Alberta Interactive Computing

- **Have developed THOR cluster**
  - **Commodity processor & network**
  - **54 dual & 1 quad P3 nodes**
  - **Disk space of 2 TB**
    - Running PVFS on 300 GB
- **Currently installing cdfsoft2**
  - **Are part of Canadian GRID effort**

Alberta interested In assisting with GRID effort within CDF



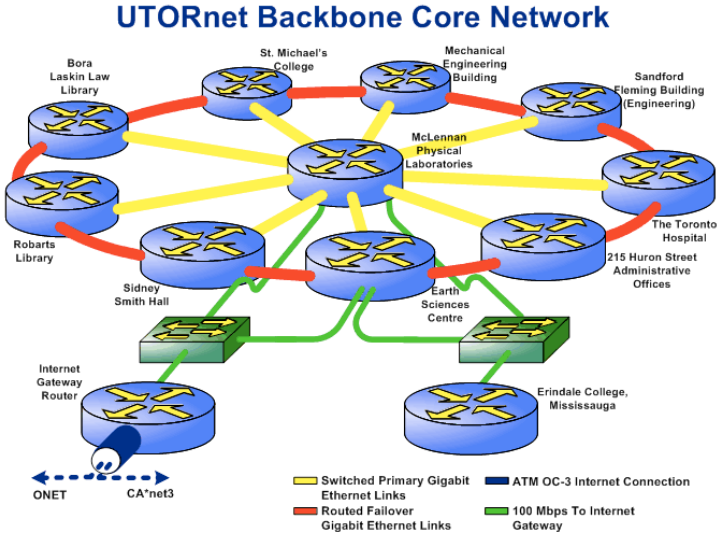
LAN and WAN Infrastructure Crucial

- **LAN is 100 Mbps to workstations**
  - **Cluster connectivity is not limiting factor yet**
    - Upgrade to GigE when necessary
  - **Have access to Gigabit University backbone**

- **Currently, limited by "last km" problem**
  - **Have to arrange direct access to Gigabit Regional network (ONET)**
  - **ONET connected to national network**
    - CA*Net4 provides 2.5 Gbps
    - Separate from commercial internet
  - **Problem not so bad**
    - ONET Gigapop in Physics Bldg

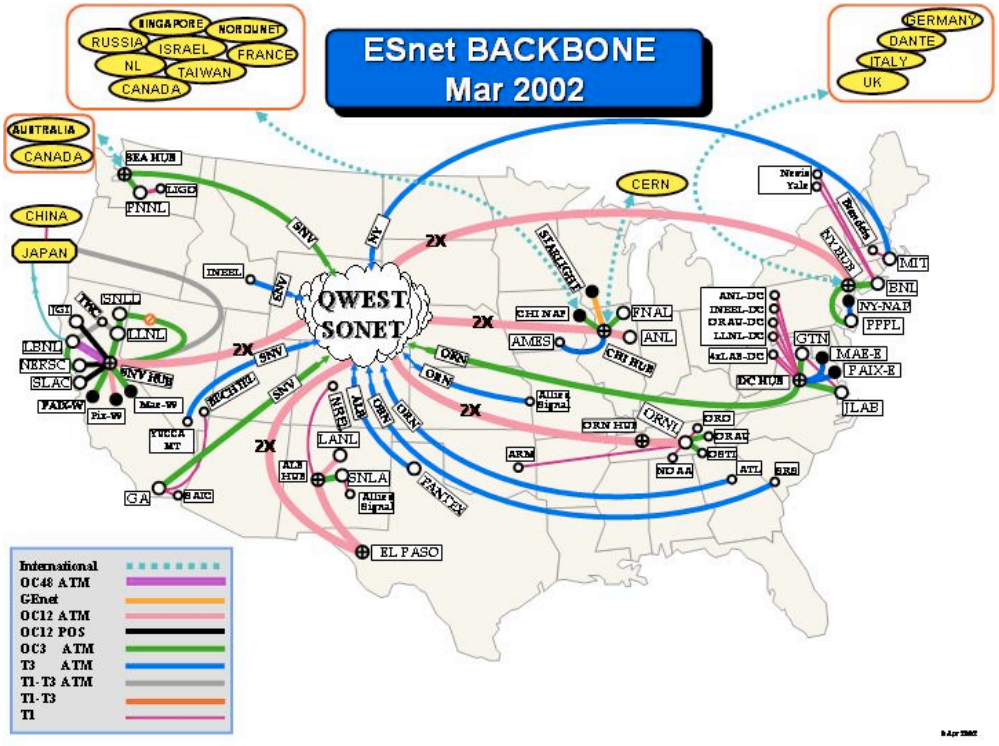
Toronto - CA*Net4 Connectivity

- University has 15 Mbps link
  - Actual performance from desktop to fcdfsgi2 is 1.4 MB/s
  - 15 Mbps link is “virtual” limit
- Have agreement for direct Gigabit connection to ONET
  - Last week, measured 8 MB/s via ftp to fcdfsgi2
  - Setting up longer-term monitoring of throughput



Canada - US Network Connectivity

- **CA*Net4 OC48 backbone in place**
  - **Gigabit across country and to STARLIGHT**
- **FNAL WAN bandwidth**
  - **FNAL -> ESNET traffic to grow to DC 200 Mbps**
  - **Currently OC3 (156 Mbps) to ESNET**
    - Actually dual OC3 trunks
    - Going to OC12 (622 Mbps) sometime in 2002



Toronto Large-Scale Computing

- **Have funding for large Linux cluster (US$ 2M)**
  - **224 nodes of dual 2.4 GHz P4's**
    - 2 GB memory and 30 GB IDE
  - **14 2-TB fileservers**
    - IBM x345's with 2 EXP300
      - **14 73-GB SCSI disks each**
    - Dual GigE interfaces
  - **Network fabric is GigE to all nodes**
  - **Firewall machine with GigE ports**
    - ONET & Physics subnet
- **Would provide for CDF**
  - **MC production facility**
  - **CPU-intensive reprocessing**
- **Design finalized, room in prep**
  - **Commissioned by November 2002**

Next Steps for CDF IPP Group

- **Next steps include**
  - **IBM cluster online**
  - **Install batch system**
  - **Upgrade external network link**
    - Have agreement to proceed over next few weeks
- **Proposal under development to use cluster as MC farm**
  - **Would commit to producing 300M events over next 2 years**
  - **Transfer to FNAL over network**
    - Needs minimum of 1 MB/s DC
    - Need to develop robust process
  - **Provide senior personnel to coordinate overall MC production**
  - **Alberta group very interested in participating in CDF GRID**