

Update since last HEPiX/HEPNT meeting

■ NETWORK

■ DNS BOOTP DHCP

■ PRINTERS/PLOTTERS

■ LEGACY VMS

■ ALPHA/TRU64 SERVERS

■ PC on X-WINDOWS

■ PC PRINT/DOMAIN
SERVER

■ UNIX PRINT SERVER

■ MAIL SERVER

■ WEB SERVER

■ LINUX/TRU64 AP.
SERVER

■ LINUX COMPUTE
SERVER

■ UNIX BACKUP SERVER

■ PC BACKUP SERVER

■ Extruded Offsite Subnet

FUTURE DEVELOPMENTS

■ WestGrid

TRIUMF NETWORK

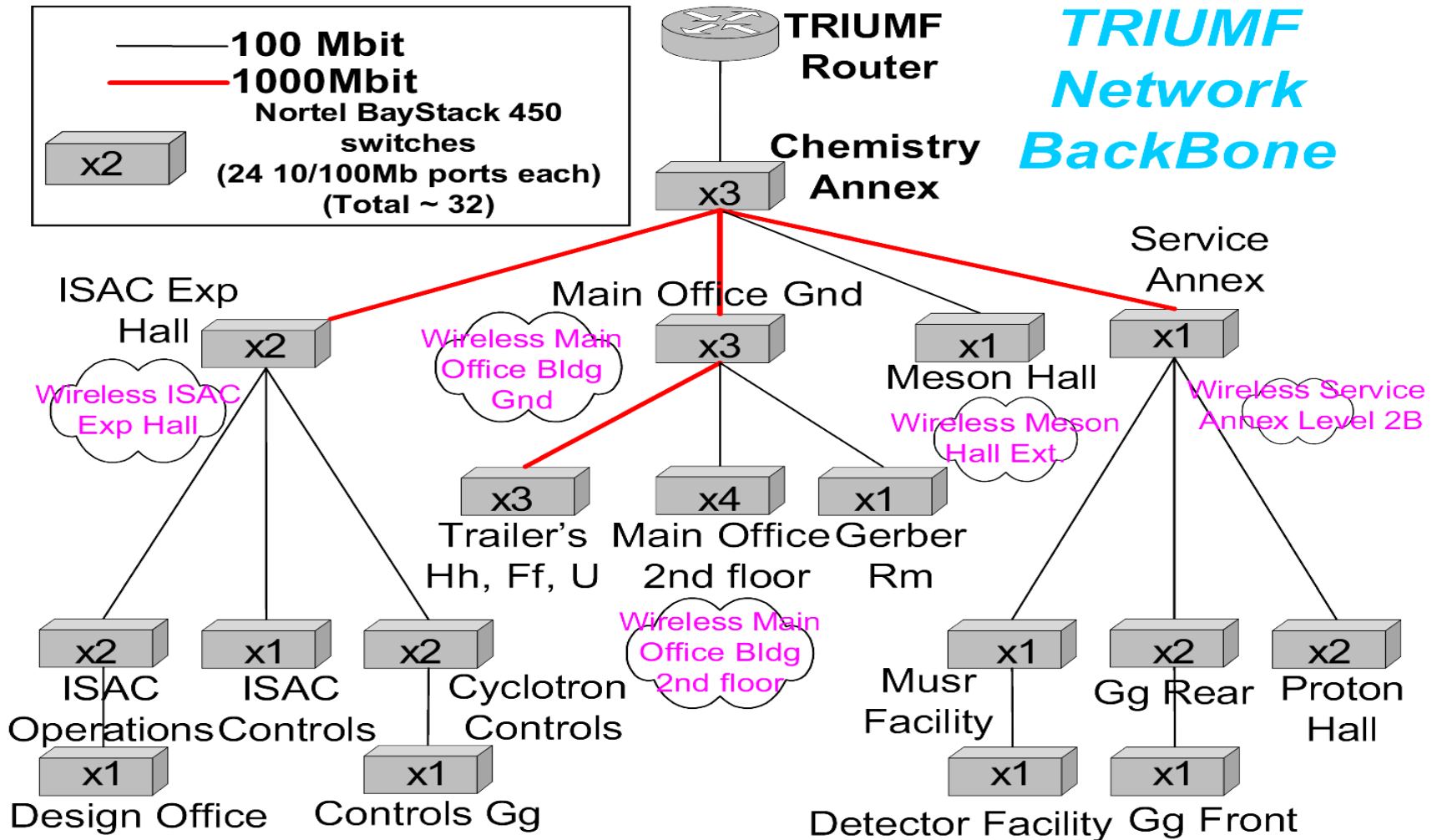
Components :

- 100 Mbit Fore Powerhub to UBC (route01)
- Passport 8003 Routing Switch – 8*1Gb ports (2Q02)
- 32 Baystack 450-24T Gigabit Switches
- FDDI Ring (phased out Oct 1/01)

Function:

- TRIUMF's Internet connection
- Site-wide network connections
- Class B with 26 active subnets (C) ~800 active connections

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Module Name: REG/ERICH

Components :

- Dual DSSI/ Dual Vax 4000 VMS 6.2
- 128Mb memory each, 172Gbytes disk

Function:

- Legacy VMS server

VMS Mail terminated Dec31/2000

Disable Login Sep 1/2002, Power-off
Jan1/2003

Module Name: **TNTRV00**

Components :

- Dual 1GHz P3, Windows 2000
- 1GB memory, 3*62GB SCSI disks
- Old TNTRV01 acts as backup

Function:

- Windows Primary Domain Controller
- Active Directory
- File Server for Windows
- Print Server for PC's/Macs
- Application Server for Macs

Module Name: TRBACKUP

Components :

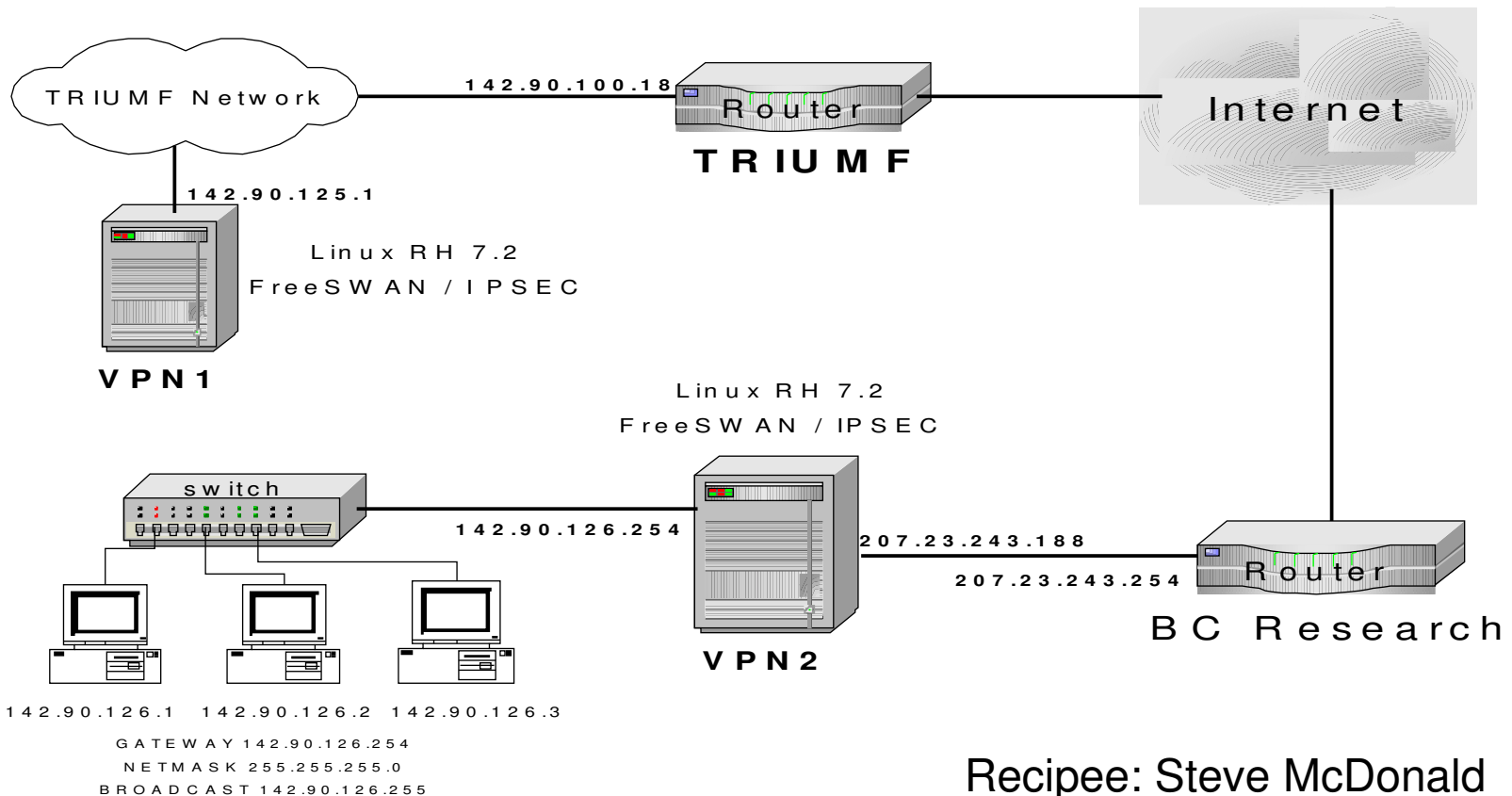
- 667 MHz Pentium III – VALinux- RH6.2
- 128 Mb memory, 10 Gbytes disk
- DLT-8000 (40/80GB tapes)
- **ATL PowerStor L200 SDLT220 (8 slot 110/220GB)**
- SDLT Native goals: 160(2002Q1), 320(2003Q4), 640(2005), 1280(2006Q4)

Function:

- Central **Backup/Restore** Utility(BRU) server

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**The TRIUMF - BC Research Extruded Subnet
 Secure tunnel between VPN1 and VPN2**



Recipee: Steve McDonald
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SUPPORT SUMMARY

- FAST – FLEXIBLE – MANAGEABLE NETWORK
- All servers / network components on UPS/Diesel
- RedHat Linux V6.2 / V7.1 (CERN Library)
- RedHat Linux V7.2 EXT3 (non-CERN)
- Migrate X-window terminals → Redhat Linux Boxes
- Centralized Mail/Print/Backup services
- Centralized Linux Updates/Security Patches
- More Wireless (Lucent Orinoco AP1000)
- Extruded Subnet Support

Works in Progress

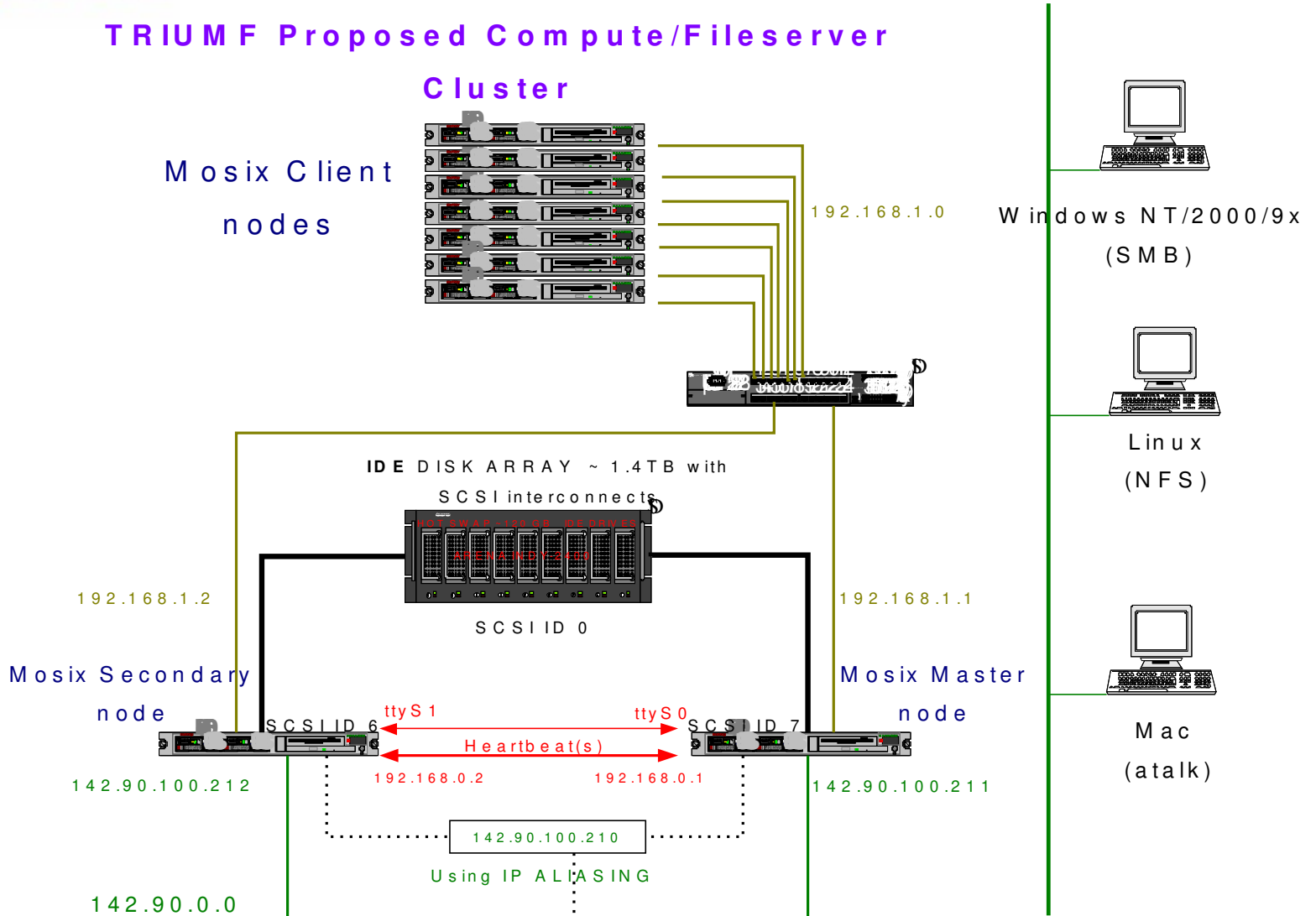
Problems

- Need for small local cluster
- Need to consolidate disk storage
 - More efficient use of disk space
 - Move to rack-mountable
 - Add more with little impact
 - Improved reliability (raid, hot-swap)

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TRIUMF Proposed Compute/Fileserver Cluster



IDE Box Details



Indy-2400

- 512Mb SDRAM
- Dual Channel Ultra 160
- Hot swappable IDE drives
- Raid 0, 1, 0+1, 3, or 5
- Dual Power Supplies

Status of WestGrid







- Federal Funding of \$12m approved
- Waiting for BC/Alberta matching funds
- Request for Information is in draft mode
- Request for Proposals upon matching funding

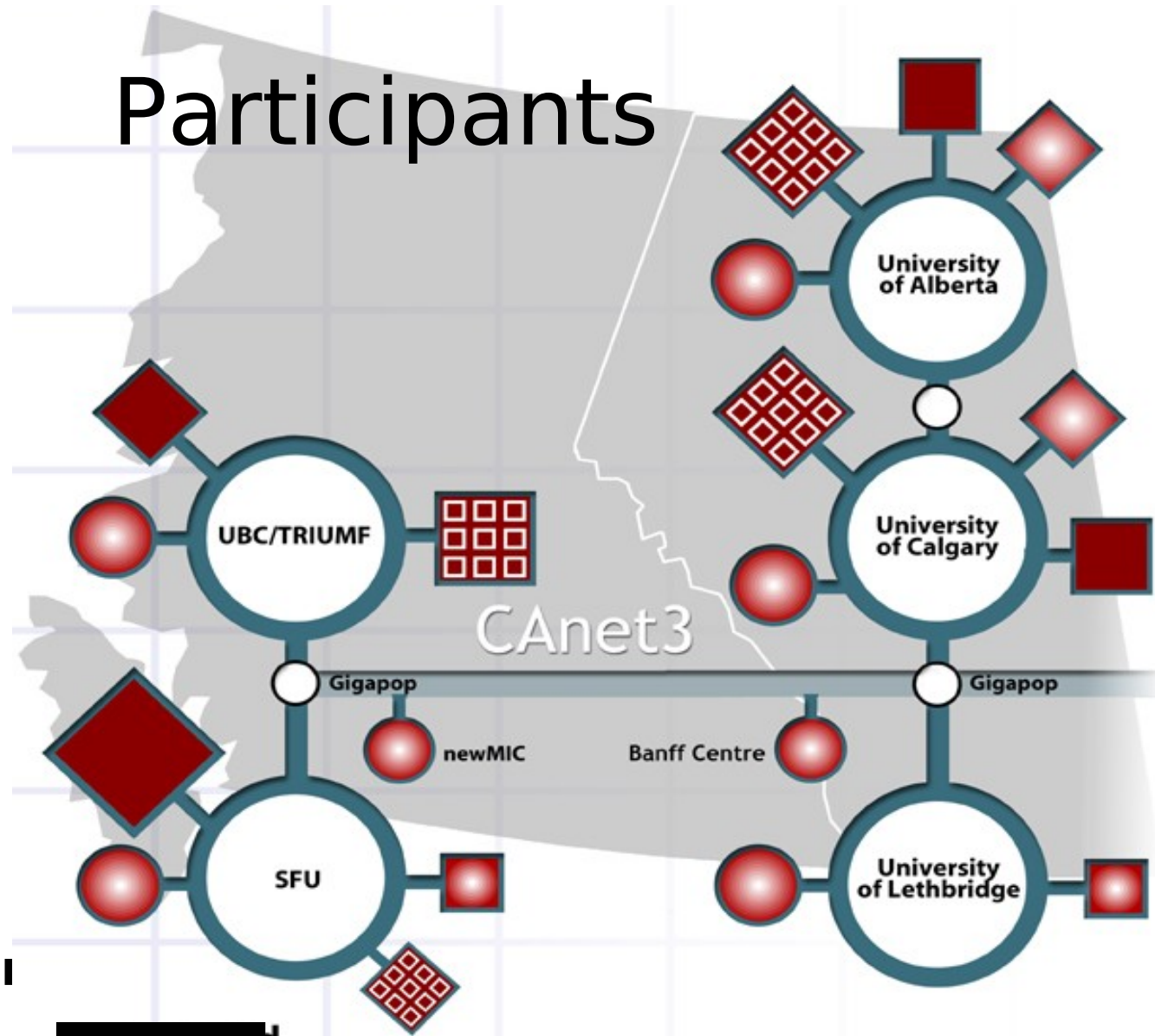


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Participants

LEGEND

-  Grid Storage
-  Scientific Visualization
-  Advanced Collaboration
-  Computational Resources



Computational Sites



Alberta:

University of Alberta, University of Calgary,
University of Lethbridge, The Banff Centre,

British Columbia:

University of British Columbia, Simon Fraser
University,

New Media Innovation Centre (NewMIC), TRIUMF

WestGrid Site Facilities



- **Univ. of Alberta:** A 128-CPU / 64GB memory SMMP machine + 5Tb Disks 25Tb Tape (Fine grained concurrency)
- **Univ. of Calgary:** A 256-node 64bit / 256GB Cluster of Multi-Processors (CluMP) + 4Tb Disks (Medium grained concurrency)
- **UBC/TRIUMF:** 1000/1500 CPU “naturally” parallel commodity cluster, 512Mb/CPU, with 10 TB of (SAN) disk, 70-100 TB of variable tape storage (Coarse grained concurrency)
- **SFU (Harbour Center):** Network storage facility 25 TB of disk, 200 TB of tape

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TRIUMF Computing Needs

- **TWIST:** 72 TB/yr of data; 20 TB/yr of Monte Carlo
~125 cpus (1 GHz)
- **E949:** 100 TB/yr of data (50% at TRIUMF/UBC)
~ 100 cpus (part time)
- **ISAC:** Data set not huge, but analysis requires
large- scale parallel computing
- **PET:** 3-D image reconstruction → parallel
computing
- **Large-scale Monte Carlo:** BaBar (230 cpus),
ATLAS (200 cpus), HERMES (100 cpus)

Summary: - 250-300 cpus for data analysis
- ~500 cpus for Monte Carlo
- 150-200 TB/yr of storage





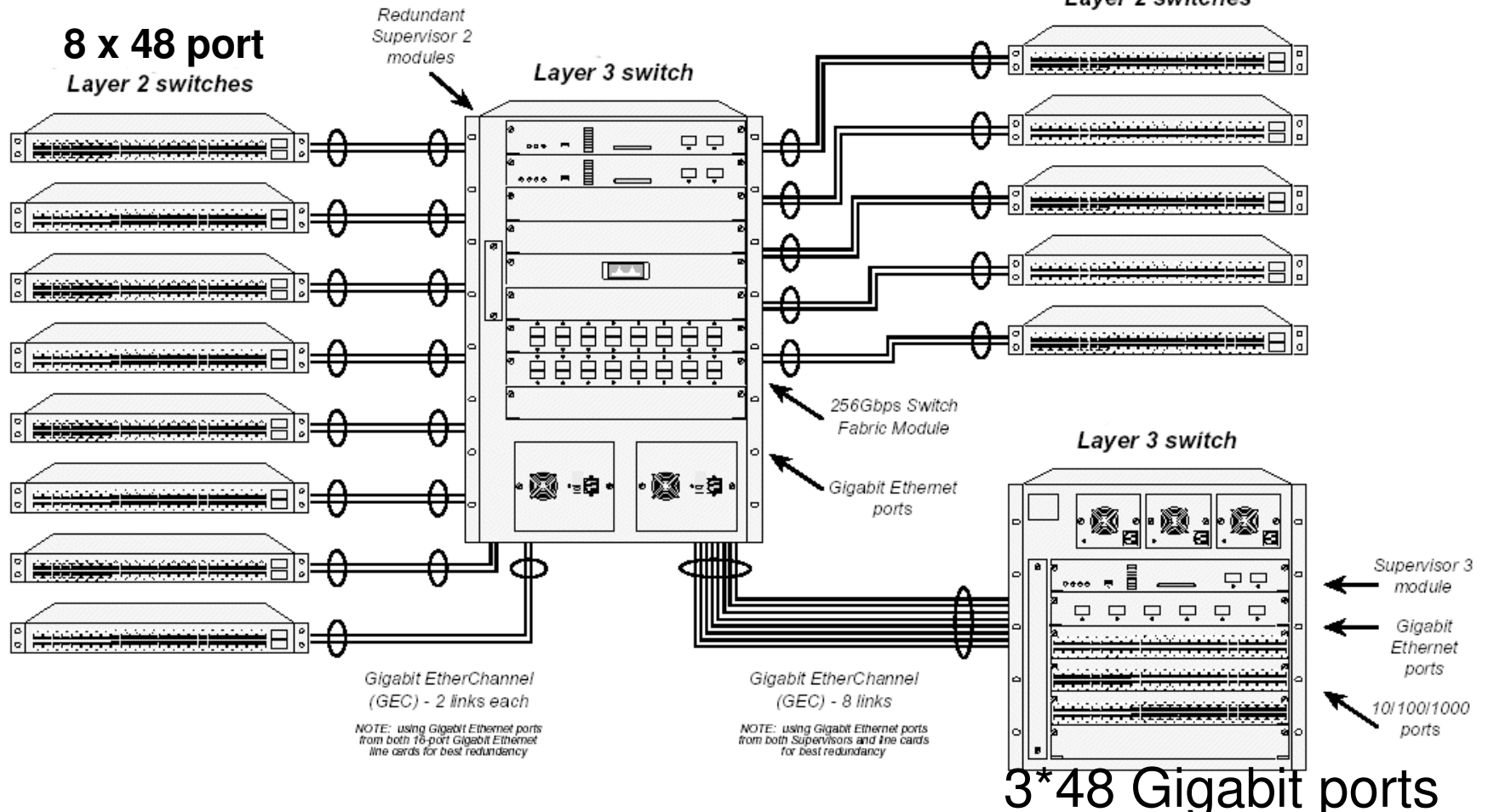
Management Issues

- Limit to 3-4 people/site
(hardware/system, not software dev.)
- SAN management
- Tape management
- Security
- Single logins across WestGrid

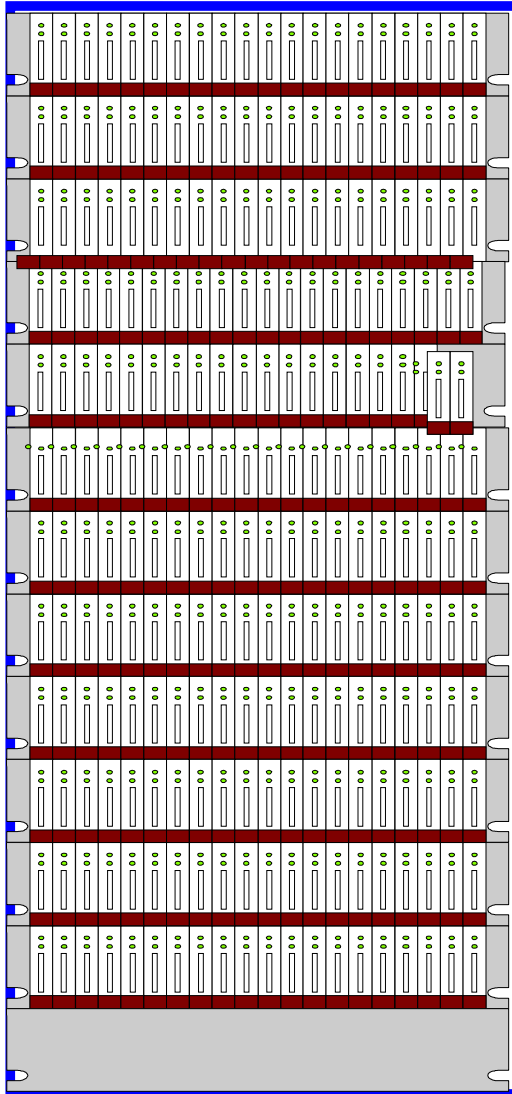
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624 * 10/100 ports
 144 * 10/100/1000 ports



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Sample Rack Configuration

- 3U blades
- 20 Blades / 3U
- 280 servers in 42U rack
- 512Mbytes memory/server
- 9GB disk/server
- Two 10/100 Ethernets/server