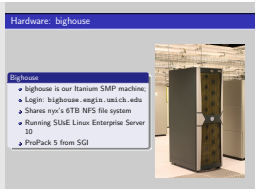
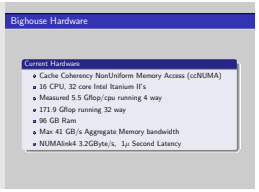
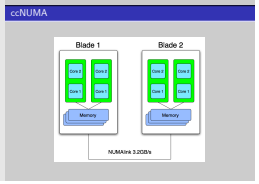


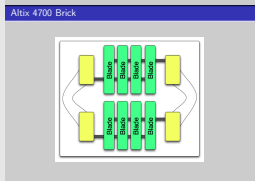
ProPack: Provides performance tools, hardware tools and MPT(MPI) libraries



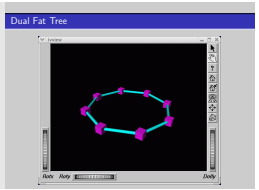
1. Keeps cache lines in sync both good and bad
   Makes for easy programming, places upper limit vs. CRAY
2. HPL P=2 Q=2 N=20000, MKL no threads, MPT
3. HPL P=4 Q=8 N=20000, MKL no threads, MPT
4. 2 nodes have 24GB, 6 have 8GB



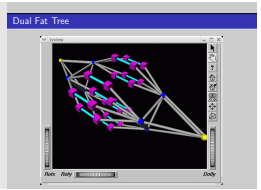
1. Itanium II's 9000's.
   L1 16k/d 16k/i
   L2 256k/d 1024/i
   L3 4MB
2. SHUB2 I FORGOT IT!
   It Sits between the cpus and memory Numa link connects to it.
   This is where the magic happens



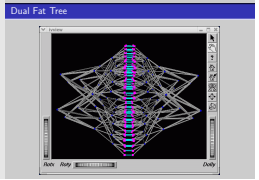
1. Each blade has 2 NUMAlink connections, each goes to a differnt router, each router has a 200 nanoSec pass time.



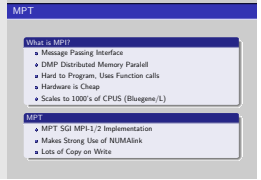
1. This would be our layout but turns out its not this would apply to the 450 if we had it.



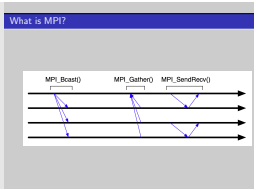
1. this is our layout (at 8 blades), We only have half the ring though, max number of hops will equal up to 16 blades 64 cores



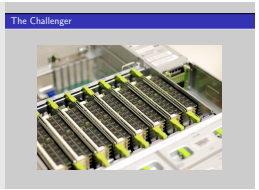
1. Provides 1024 cores 512 sockets
   This is the max supported config from SGI, system can add one more router out for 1024 sockets 2048 cores, MTTF is to high though



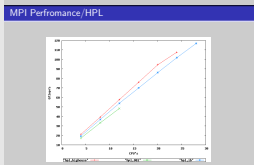
1. `www.mpi-forum.org`
2. We have similar SM ability on nyx though OpenMPI



1. Duplicates allot of data between processes
2. nothing shared unless given

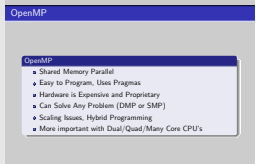


1. `nyx801` Owned by Dr. J Norman MD, PHD.
   64 GB ram, on 8 sockets, dual core 8218's

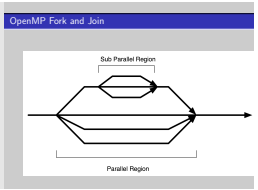


1. **Hardware:**
   'hpl.bighouse' is bighouse
   - mpt
   - mkl no thread

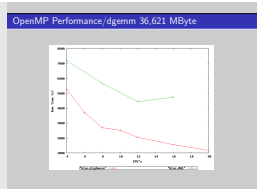
   'hpl.801' is nyx801
   'hpl.ib' is EMike Nodes, dual core dual socket opt2220, 16 GB ram,
   DDR Infiniband 20Gbit/s $< 4\mu$ Sec. Latency
   - openmpi-1.2-pgi, OFED
   - goto-blas
2. point out gapping as number of CPUS increase
   Why Bighouse is surperior, but not at this size and price



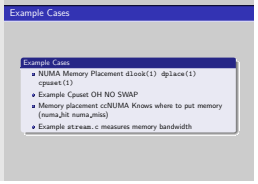
1. Thread sync issues, implemented with libpthread normally
2. in GCC 4.1
3. Can FLOOD bus/interconect because of cache sync issues



1. This is what allot of Direct CAE apps use (Nastran Abaqus)
   Most interative solvers are dense matrix solvers in DMP (LS-DYNA)
2. STRESS This is bighouse's benefit, it can the ram and SMP ability to run these codes at a speed a regular cluster could never do



1. `www.netlib.org/blas`
   Bighouse uses MKL
   nyx801 Uses ACML-pgi-mp
   2 equal square matrix's of random nubmers with a dim of: 40,000 Doubles.
   This is 3,200,000,000 (3.2 billion numbers)
   Same building block used in hpl



- **Example 1**, cpu sets
- cpuset -c brockp -f brockp/cpuset.conf
- echo $$ >> /dev/cpusets/brockp/tasks

- **Example 2**, link speeds
- `linkstat -A`
- `pmchart` numa.mem.util.used
- `pmchart` numa.link.send_bytes
- run `stream.c`