

A Crash course to (The) Bighouse

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Outline

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 - Configuration
 - Hardware
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 - ccNUMA
 - Altix 4700 Brick
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Hardware: bighouse

Bighouse

- bighouse is our Itanium SMP machine;
- Login: `bighouse.engin.umich.edu`
- Shares nyx's 6TB NFS file system
- Running SUSE Linux Enterprise Server 10
- ProPack 5 from SGI

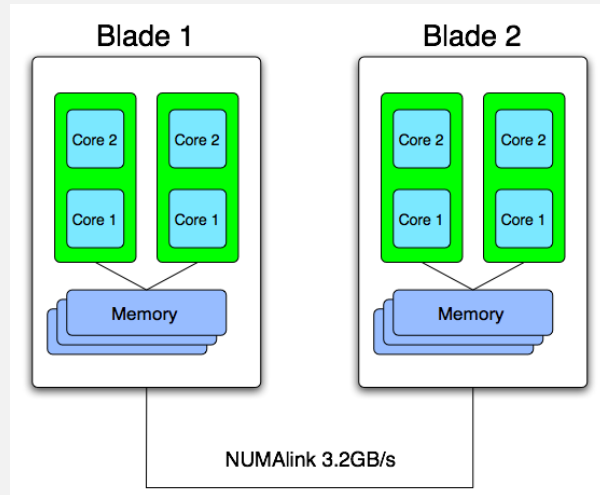


Bighouse Hardware

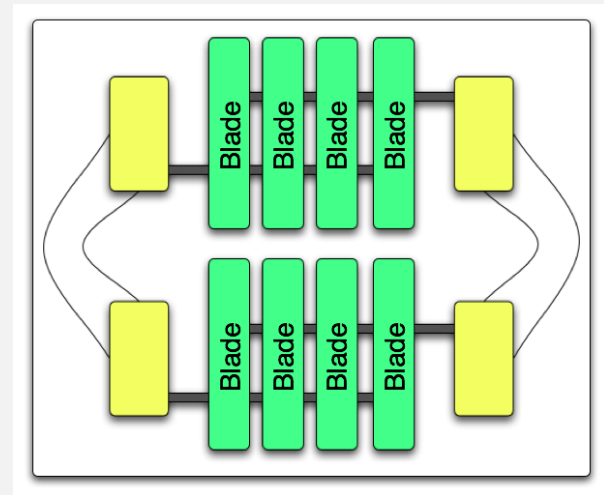
Current Hardware

- 16 CPU, 32 core Intel Itanium II's
- Measured 5.5 Gflop/cpu running 4 way
- 171.9 Gflop running 32 way
- 96 GB Ram
- Max 41 GB/s Aggregate Memory bandwidth

ccNUMA



Altix 4700 Brick



Packaged Software

Packaged Software

- Abaqus/6.6
 - abaqus_v6.env
 - standard_memory_policy=15000mb
 - standard_memory_policy=MAXIMUM
- Nastran/2007r2
- Gaussian/03
 - %nproc=8
 - %mem=20gb
 - **DO NOT SET \$GAUSS_SCR**

Abaqus

Abaqus Example

- mkdir /tmp/\$PBS_JOBID
- cd /tmp/\$PBS_JOBID
- cp ~/Input.inp .
- cp ~/abaqus_v6.env .
- abaqus job=Input scratch=/tmp interactive cpus=10
- cp -fr * ~/ && rm -fr /tmp/\$PBS_JOBID

Nastran

Nastran Example

- mkdir /tmp/\$PBS_JOBID
- cd /tmp/\$PBS_JOBID
- cp ~/Input.inp .
- cp ~/abaqus_v6.env .
- nastran batch=no hpmpi=yes dmp=10 input.dat
- cp -fr * ~/ && rm -fr /tmp/\$PBS_JOBID

Compilers

Compilers

- ifort Fortran90/77
- icc C
- icpc C++
- GNU Compilers are available but not recommended

Compiler Options

- -O2 General optimization
- -O3 -ipo -funroll-loops -ftz Better Optimization
- -openmp Enable OpenMP support

Libraries

Libraries

- MPT
 - MPI Library Optimized for Shared Memory
 - ifort source.f90 -lmpi
 - mpirun -np 10 a.out
- MKL Math Kernel Library
 - Optimized Threaded Math Library
 - Full Support for BLAS and LAPACK
 - PRNG FFT's, and FFTW compatible
 - **DO** Use, Contact us for support

PBS

PBS

- Memory is Enforced
 - Defaults to 1MB
 - Use #PBS -l mem=100mb to request what you need
- Use route queue
- Only 30 cpus available for batch jobs
- 2 cpus for compiling sftp PBS etc
- Please clean up /tmp

Questions

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<http://cac.engin.umich.edu/resources/bighouse.html>

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