

# A Crash course to (The) Bighouse

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SVTI Users meeting Sep 20th

## Outline

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  - 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

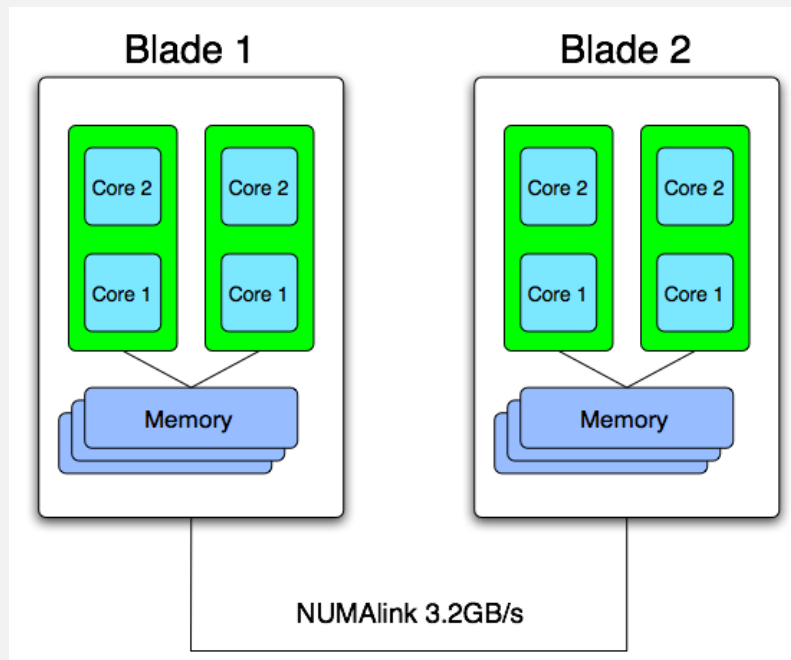


# Bighouse Hardware

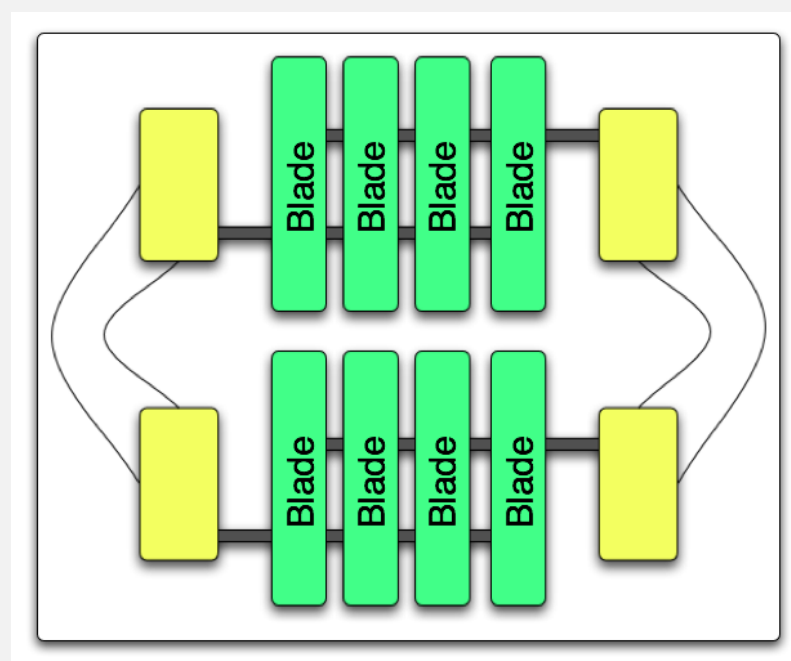
## Current Hardware

- 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

Questions?

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

[cac-support@umich.edu](mailto:cac-support@umich.edu)