Center for Turbulence Research
CTR Summer Program 2012
Technology Information

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June 25, 2012

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Step 1 – in case you haven't already done this….

Create your SUNetID at http://sunetid.stanford.edu

For network access

Send hardware address to ctr-summer-program@lists.stanford.edu

Large Memory Workstations

- **Dual Quad-Core Intel Westmere Processors**
- **72 GB Memory per workstation**
- **1 TB disk space**
- **High Speed NVIDIA Graphics Adapter**
- **Located in 524 and Building 500 CFD Lab**

Printers, telephone, supplies located on main floor Building 524

Whom do I contact for support issues?

ctr-summer-program@lists.stanford.edu for all support issues, VPN, printer configuration applications, SUNetID assistance, cluster issues or general program questions.

Where can I go for in-person assistance?

Drop-in support available at CTR 101

Where can I locate this slide deck and further information?

Web site http://ctr.stanford.edu (summer program)

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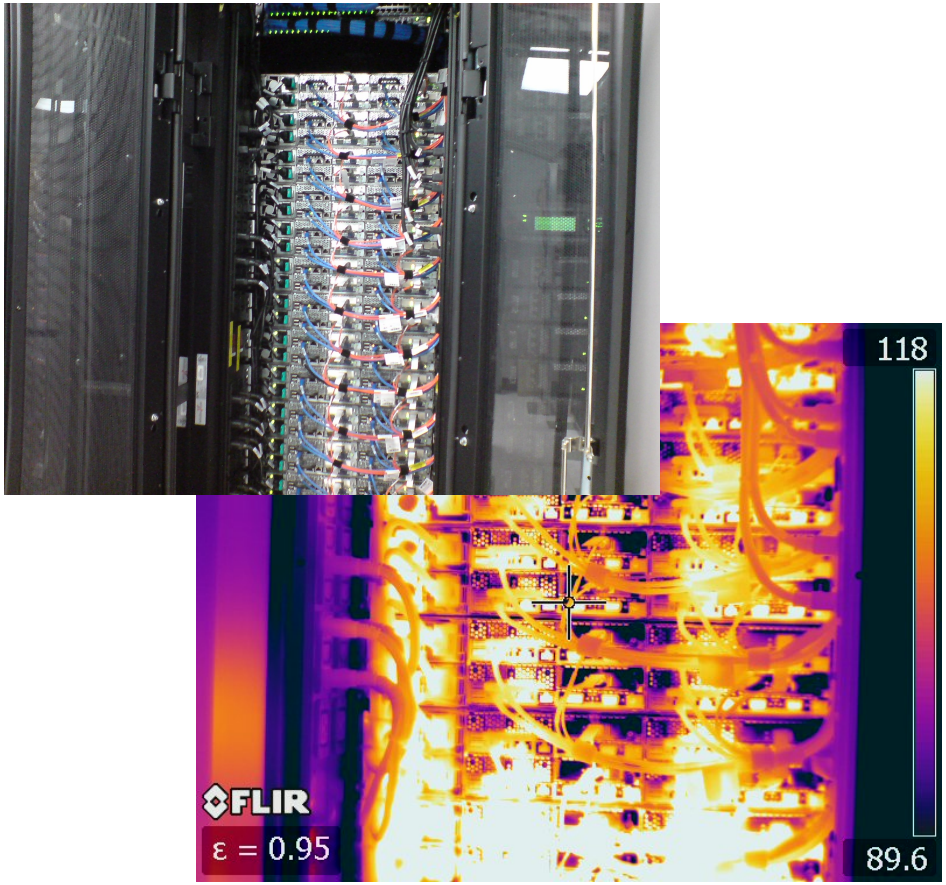
WCR 1,300 Core Compute Cluster

- 165 Compute Nodes
  - Dual Quad-Core Intel Xeon (8core/node)
  - 8GB Memory/Node
  - Infiniband
  - High Speed Parallel File System
  - Intel Compilers/OSU MVAPICH

Web Page http://hpcc.stanford.edu/clusters/wcr.html



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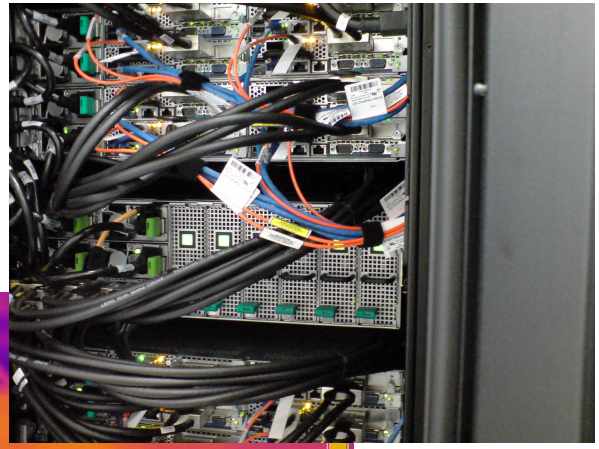
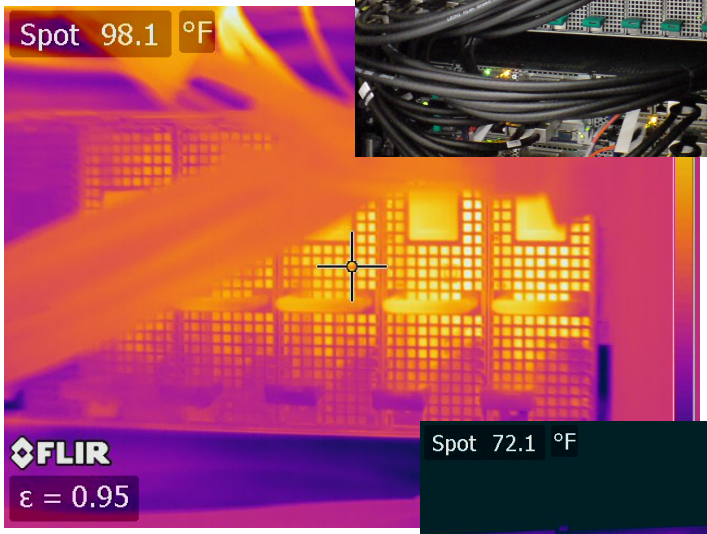
Certainty 7000 Core Compute Cluster

- 560 Compute Nodes
  - Dual Intel Westmere (12 core/node)
  - 36GB Memory/Node
  - 144GB Large Memory Nodes
  - 120 NVIDIA M2050 GPUs
  - Infiniband
  - High Speed Parallel File System
  - Intel Compilers/OSU MVAPICH

Web Page http://hpcc.stanford.edu/clusters/certainty.html





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First I'll connect to a cluster using my SUNetID

$ ssh sunetid@certainty-login

Now I'll check my environment real quick to see what's loaded:

[sunetid@certainty-a ~]$ module list

Currently Loaded Moduefiles:
1) intel/intel-12 2) mvapich2/1.8a1p1-intel-12 3) nvidia/cudatoolkit-4.2.9

Looks good, let me check on other modules available:

[sunetid@certainty-a ~]$ module avail

```
---------------------- /share/apps/modules/modulefiles ------------------------
ansys/ansys-12                    intel/intel-12                                nvidia/cudatoolkit-3.2.9
ansys/ansys-13.0                  intel/intel-9                                 nvidia/cudatoolkit-4.2.9
boost/1.49.0                      mvapich/1.2rc1-intel-10-dell-gen2-fPIC        openmpi/1.4.1-intel-11
cmake/2.8.5                       mvapich/1.2rc1-intel-11-dell-gen2             openmpi/1.4.2-intel-11
cmake/2.8.7                       mvapich/1.2rc1-intel-11-dell-gen2-debug       openmpi/1.5-trunk-intel-11
git/1.7.9.5                       mvapich/1.2rc1-intel-11-dell-hybrid           parmetis/4.0.2
hdf5/1.8.8                        mvapich/1.2rc1-intel-11-dell-hybrid-fPIC      pgi/pgi-10.1
hmpp/2.5.0                        mvapich2/1.5rc2-intel-11                      pgi/pgi-11.6
intel/intel-10                    mvapich2/1.7rc1-intel-12                      totalview/totalview.8.8.0-1
intel/intel-11                    mvapich2/1.8a1p1-intel-12                     vasp/vasp-5.2
```

Lot's of options....

Let's build something using our tools...

```
[sunetid@certainty-a ~]$ mpif90 -o bounce.test /share/apps/examples/bounce/bounce.f
```

Now to request resources, we'll use the debug queue for a quick test

```
[sunetid@certainty-a ~]$ qsub -I -q debug -l nodes=1:ppn=2
```

We're on a debug node, now let's run the application using mpiexec

```
[sunetid@compute-140-4 ~]$ mpiexec ./bounce.test

 Number of processors =          2
msglen =       0 bytes,        elapsed time =    0.0013 msec
msglen =      80 bytes,        elapsed time =    0.0006 msec
msglen =     800 bytes,        elapsed time =    0.0009 msec
msglen =    8000 bytes,        elapsed time =    0.0057 msec
msglen =   80000 bytes,        elapsed time =    0.0208 msec
msglen =  800000 bytes,        elapsed time =    0.1244 msec
msglen = 8000000 bytes,        elapsed time =    1.6568 msec
latency =   1.3 microseconds
 bandwidth =   4828.60111381330       MBytes/sec
(approximate values for mp_bsend/mp_brecv)
```

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Login nodes are:

Certainty – certainty-login.stanford.edu

WCR – wcr-a.stanford.edu and wcr-b.stanford.edu

Available queues are:

Certainty – default, largemem, long, debug, gpu

WCR – short, long, debug

Submitting to alternate queues:

[sunetid@certainty-a $] qsub -I -q [queue-name]

Or in a script

#PBS -q [queue-name]

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Where is the Summer Program data located?

Certainty – /panfs/panfs-certainty/ctr-summer-program/[SUNetID]

WCR – /panfs/panfs-glacial.stanford.edu/ctr-summer-program/[SUNetID]

Or more easily /home/[SUNetID]

What about space for sharing data with others?

Certainty – /panfs/panfs-certainty/ctr-summer-program/shared/

WCR – /panfs/panfs-glacial.stanford.edu/ctr-summer-program/shared/

REMINDER – everyone has read/write/execute permissions on this directories

Questions?

•Contact ctr-summer-program@lists.stanford.edu for all support issues
•VPN, Printer configuration, Applications, SUNetID

•Drop-in support available at CTR 101
•**Web site http://ctr.stanford.edu (Summer Program)**