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The CSDMS High Performance Computing Cluster (Code name: beach)

The CSDMS High Performance Computing Cluster (HPCC) provides CSDMS researchers a state-of-the-art HPC cluster.

Use of the CSDMS HPCC is available free of charge to the CSDMS community! To get an account on our machine you will need to: become a member of the CSDMS project, and sign up for an account. That's it!

Hardware



The CSDMS High Performance Computing Cluster is an SGI Altix XE 1300 that consists of 64 Altix XE320 compute nodes (for a total of 512 cores). The compute nodes are configured with two quad-core 3.0GHz E5473 (Harpertown) processors. 54 of the 64 nodes have 2 GB of memory per core, while the remaining nodes have 4 GB of memory per core. The cluster is controlled through an Altix XE250 head node. Internode communication is accomplished through either gigabit ethernet or over a non-blocking InfiniBand fabric.

Each compute node has 250 GB of local temporary storage. However, all nodes are able to access 36TB of RAID storage through NFS.

The CSDMS system will be tied in to the larger 7000 core (>100 Tflop) **Front Range Computing Consortium**. This supercomputer will consist of 10 Sun Blade 6048 Modular System racks, nine deployed to form a tightly integrated computational plant, and the remaining rack to serve as a GPU-based accelerated computing system. In addition, the Grid environment will provide access to NCAR's mass storage system.

Hardware Summary

Node	Type	Processors	Memory	Internal Storage
beach.colorado.edu	Head (Altix XE250)	2 Quad-Core Xeon [1]	16GB [2]	--
cl1n001 - cl1n056	Compute (Altix XE320)	2 Quad-Core Xeon [1]	16GB [2]	250GB SATA
cl1n057 - cl1n064	Compute (Altix XE320)	2 Quad-Core Xeon [1]	32GB [2]	250GB SATA

1. ? 1.0 1.1 1.2 Processors are Quad-core Intel Xeon E5473 (Harpertown):

- ◆ Front Side Bus: 1600 MHz

- ◆ L2 Cache: 12MB

2. ? 2.0 2.1 2.2 Memory is DDR2 800 MHz FBDIMM

Software



Below is a list of some of the software that we have installed on beach. If there is a particular software package that is not listed below and would like to use it, please feel free to send an email to [us](#) outlining what it is you need.

Compilers

Name	Version	Module Name	Location
<u>gcc</u>	4.1	gcc/4.1	/usr
<u>gcc</u>	4.3	gcc/4.3	/usr/local/gcc
<u>gfortran</u>	4.1	gcc/4.1	/usr
<u>gfortran</u>	4.3	gcc/4.3	/usr/local/gcc
icc	11.0	intel	/usr/local/intel
ifort	11.0	intel	/usr/local/intel
<u>mpich2</u>	1.1	mpich2/1.1	/usr/local/mpich
<u>mvapich2</u>	1.2	mvaich2/1.2	/usr/local/mvapich
<u>openmpi</u>	1.3	openmpi/1.3	/usr/local/openmpi

Languages

Name	Version	Module Name	Location
Python[1]	2.4	python/2.4	/usr
Python[2]	2.6	python/2.6	/usr/local/python
Java	1.5	--	--
Java	1.6	--	--
perl	5.8.8	--	/usr
<u>MATLAB</u>	2008b	matlab	/usr/local/matlab

1. Python 2.4 modules:

- ◆ numpy 1.2.1
- ◆ scipy 0.6.0
- ◆ Python Imaging Library (PIL)

2. Python 2.6 modules:

- ◆ numpy 1.3.0
- ◆ scipy 0.7.1rc3
- ◆ PyNIO 1.3.0b1
- ◆ iPython 0.10
- ◆ Cython 0.11.3

Libraries

Name	Version	Module Name	Location
<u>Udunits</u>	1.12.9	udunits	/usr/local/udunits
<u>netcdf</u>	4.0.1	netcdf	/usr/local/netcdf
<u>hdf5</u>	1.8	hdf5	/usr/local/hdf5
<u>libxml2</u>	2.7.3	libxml2	/data/progs/lib/libxml2
<u>glib-2.0</u>	2.18.3	glib2	/usr/local/glib
petsc	3.0.0p3	petsc	/usr/local/petsc
<u>mct</u>	2.6.0	mct	/data/progs/mct/2.6.0-mpich2-intel

Tools

Name	Version	Module Name	Location
<u>cmake</u>	2.6p2	cmake	/usr/local/cmake
<u>scons</u>	1.2.0	scons	/usr/local/scons
<u>subversion</u>	1.6.2	subversion	/usr/local/subversion
<u>torque</u>	2.3.5	torque	/opt/torque
	3.2.6	--	/usr/local/modules

Environment
modules