SGI

SGI Altix ICE 8200EX
(Intel Xeon X5570, 2.93 GHz)

SPECmpiM_base2007 = 3.52

MPI2007 license: 4
Test sponsor: SGI
Tested by: SGI

Test date: Feb-2009
Hardware Availability: Mar-2009
Software Availability: Jan-2009

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
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<td>433</td>
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<td>433</td>
<td>3.62</td>
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<td>113.GemsFDTD</td>
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<td>121.pop2</td>
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<tr>
<td>127.wrf2</td>
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<td>1197</td>
<td>6.51</td>
<td>1200</td>
<td>6.50</td>
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<tr>
<td>128.GAPgeofem</td>
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<td>129.tera_tf</td>
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</table>

Results Table

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.
### Results Table (Continued)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Seconds Base</th>
<th>Ratio Base</th>
<th>Seconds Peak</th>
<th>Ratio Peak</th>
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</thead>
<tbody>
<tr>
<td>130.scorro</td>
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<td>4.27</td>
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<td>132.zeusmp2</td>
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<td>3.22</td>
<td>973</td>
<td>3.19</td>
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<td>137.lu</td>
<td>16</td>
<td>1253</td>
<td>2.93</td>
<td>1257</td>
<td>2.93</td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

### Hardware Summary

- **Type of System:** Homogeneous
- **Compute Node:** SGI Altix ICE 8200EX Compute Node
- **Interconnects:** InfiniBand (MPI), InfiniBand (I/O)
- **File Server Node:** SGI InfiniteStorage Nexis 2000 NAS
- **Total Compute Nodes:** 2
- **Total Chips:** 4
- **Total Cores:** 8
- **Total Memory:** 96 GB
- **Base Ranks Run:** 16
- **Minimum Peak Ranks:** --
- **Maximum Peak Ranks:** --

### Software Summary

- **C Compiler:** Intel C Compiler for Linux
  - Version 10.1, Build 20080801
- **C++ Compiler:** Intel C++ Compiler for Linux
  - Version 10.1, Build 20080801
- **Fortran Compiler:** Intel Fortran Compiler for Linux
  - Version 10.1, Build 20080801
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **MPI Library:** SGI MPT 1.23
- **Other MPI Info:** OFED 1.3.1
- **Pre-processors:** None
- **Other Software:** None

### Node Description: SGI Altix ICE 8200EX Compute Node

#### Hardware

- **Number of nodes:** 2
- **Uses of the node:** compute
- **Vendor:** SGI
- **Model:** SGI Altix ICE 8200EX (Intel Xeon X5570, 2.93 GHz)
- **CPU Name:** Intel Xeon X5570
- **CPU(s) orderable:** 1-2 chips
- **Chips enabled:** 2
- **Cores enabled:** 8
- **Cores per chip:** 4
- **Threads per core:** 2
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.33 GHz, 6.4 GT/s QPI, Hyper-Threading enabled
- **CPU MHz:** 2934
- **Primary Cache:** 32 KB I + 32 KB D on chip per core
- **Secondary Cache:** 256 KB I+D on chip per core
- **L3 Cache:** 8 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 48 GB (12*4GB DDR3-1066 CL7 RDIMMs)
- **Disk Subsystem:** None
- **Other Hardware:** None
- **Adapter:** Mellanox MT26418 ConnectX IB DDR (PCIe x8 Gen2 5 GT/s)
- **Number of Adapters:** 1

#### Software

- **Adapter:** Mellanox MT26418 ConnectX IB DDR (PCIe x8 Gen2 5 GT/s)
- **Adapter Driver:** OFED-1.3.1
- **Adapter Firmware:** 2.5.0
- **Operating System:** SUSE Linux Enterprise Server 10 (x86_64) SP2
  - Kernel 2.6.16.60-0.30-smp
- **Local File System:** NFSv3
- **Shared File System:** NFSv3 IPoIB
- **System State:** Multi-user, run level 3
- **Other Software:** SGI ProPack 6 for Linux Service Pack 2
## SPEC MPIM2007 Result

**SGI**

**SGI Altix ICE 8200EX**  
(Intel Xeon X5570, 2.93 GHz)

---

**SPECmpimM_peak2007** = Not Run  
**SPECmpimM_base2007** = 3.52

---

<table>
<thead>
<tr>
<th>MPI2007 license:</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
<td>SGI</td>
</tr>
<tr>
<td>Tested by:</td>
<td>SGI</td>
</tr>
</tbody>
</table>

---

### Node Description: SGI Altix ICE 8200EX Compute Node

<table>
<thead>
<tr>
<th>Slot Type:</th>
<th>PCIe x8 Gen2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Rate:</td>
<td>InfiniBand 4x DDR</td>
</tr>
<tr>
<td>Ports Used:</td>
<td>2</td>
</tr>
<tr>
<td>Interconnect Type:</td>
<td>InfiniBand</td>
</tr>
</tbody>
</table>

### Node Description: SGI InfiniteStorage Nexis 2000 NAS

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of nodes: 1</td>
<td></td>
</tr>
<tr>
<td>Uses of the node: fileserver</td>
<td></td>
</tr>
<tr>
<td>Vendor: SGI</td>
<td></td>
</tr>
<tr>
<td>Model: SGI Altix XE 240 (Intel Xeon 5140, 2.33 GHz)</td>
<td></td>
</tr>
<tr>
<td>CPU Name: Intel Xeon 5140</td>
<td></td>
</tr>
<tr>
<td>CPU(s) orderable: 1-2 chips</td>
<td></td>
</tr>
<tr>
<td>Chips enabled: 2</td>
<td></td>
</tr>
<tr>
<td>Cores enabled: 4</td>
<td></td>
</tr>
<tr>
<td>Cores per chip: 2</td>
<td></td>
</tr>
<tr>
<td>Threads per core: 1</td>
<td></td>
</tr>
<tr>
<td>CPU Characteristics: 1333 MHz FSB</td>
<td></td>
</tr>
<tr>
<td>CPU MHz: 2328</td>
<td></td>
</tr>
<tr>
<td>Primary Cache: 32 KB L1 + 32 KB D on chip per core</td>
<td></td>
</tr>
<tr>
<td>Secondary Cache: 4 MB L2+D on chip per chip</td>
<td></td>
</tr>
<tr>
<td>L3 Cache: None</td>
<td></td>
</tr>
<tr>
<td>Other Cache: None</td>
<td></td>
</tr>
<tr>
<td>Memory: 24 GB (6*4GB DDR2-400 DIMMS)</td>
<td></td>
</tr>
<tr>
<td>Disk Subsystem: 7 TB RAID 5 48 x 147 GB SAS (Seagate Cheetah 15000 rpm)</td>
<td></td>
</tr>
<tr>
<td>Other Hardware: None</td>
<td></td>
</tr>
<tr>
<td>Adapter: Mellanox MT25208 InfiniHost III Ex (PCIe x8 Gen1 2.5 GT/s)</td>
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</tr>
<tr>
<td>Adapter Driver: OFED-1.3</td>
<td></td>
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<tr>
<td>Adapter Firmware: 5.3.0</td>
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</tr>
<tr>
<td>Operating System: SUSE Linux Enterprise Server 10 (x86_64) SP1 Kernel 2.6.16.54-0.2.5-smp</td>
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</tr>
<tr>
<td>Local File System: xfs</td>
<td></td>
</tr>
<tr>
<td>Shared File System: --</td>
<td></td>
</tr>
<tr>
<td>System State: Multi-user, run level 3</td>
<td></td>
</tr>
<tr>
<td>Other Software: SGI ProPack 5 for Linux Service Pack 5</td>
<td></td>
</tr>
</tbody>
</table>

---

### Interconnect Description: InfiniBand (MPI)

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vendor: Mellanox Technologies</td>
<td></td>
</tr>
<tr>
<td>Model: MT26418 ConnectX</td>
<td></td>
</tr>
<tr>
<td>Switch Model: Mellanox MT47396 InfiniScale III</td>
<td></td>
</tr>
<tr>
<td>Number of Switches: 8</td>
<td></td>
</tr>
<tr>
<td>Number of Ports: 24</td>
<td></td>
</tr>
<tr>
<td>Data Rate: InfiniBand 4x DDR</td>
<td></td>
</tr>
<tr>
<td>Firmware: 2020001</td>
<td></td>
</tr>
</tbody>
</table>

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Continued on next page
SGI
SGI Altix ICE 8200EX
(Intel Xeon X5570, 2.93 GHz)

SPECmpmM_peak2007 = Not Run
SPECmpmM_base2007 = 3.52

SGI

Interconnect Description: InfiniBand (MPI)

Topology: Bristle hypercube with express links
Primary Use: MPI traffic

Interconnect Description: InfiniBand (I/O)

Hardware
Vendor: Mellanox Technologies
Model: MT26418 ConnectX
Switch Model: Mellanox MT47396 InfiniScale-III
Number of Switches: 8
Number of Ports: 24
Data Rate: InfiniBand 4x DDR
Firmware: 2020001
Topology: Bristle hypercube with express links
Primary Use: I/O traffic

Software

Submit Notes
The config file option 'submit' was used.

General Notes
Software environment:
setenv MPI_REQUEST_MAX 65536
  Determines the maximum number of nonblocking sends and
  receives that can simultaneously exist for any single MPI
  process. MPI generates an error message if this limit
  (or the default, if not set) is exceeded. Default: 16384
setenv MPI_TYPE_MAX 32768
  Determines the maximum number of data types that can
  simultaneously exist for any single MPI process.
  MPI generates an error message if this limit (or the default,
  if not set) is exceeded. Default: 1024
setenv MPI_BUFS_THRESHOLD 1
  Determines whether MPT uses per-host or per-process message
  buffers for communicating with other hosts. Per-host buffers
  are generally faster but for jobs running across many hosts they
  can consume a prodigious amount of memory. MPT will use per-
  host buffers for jobs using up to and including this many hosts
  and will use per-process buffers for larger host counts.
  Default: 64
setenv MPI_DSM_DISTRIBUTE
  Activates NUMA job placement mode. This mode ensures that each
  MPI process gets a unique CPU and physical memory on the node
  with which that CPU is associated. Currently, the CPUs are
  chosen by simply starting at relative CPU 0 and incrementing
  Continued on next page
SGI

SGI Altix ICE 8200EX
(Intel Xeon X5570, 2.93 GHz)

SPECmpimM_peak2007 = Not Run
SPECmpimM_base2007 = 3.52

General Notes (Continued)

until all MPI processes have been forked.

limit stacksize unlimited
   Removes limits on the maximum size of the automatically-
   extended stack region of the current process and each
   process it creates.
PBS Pro batch scheduler (www.altair.com) is used with
   placement sets to ensure each MPI job is assigned to
   a topologically compact set of nodes
BIOS settings:
   AMI BIOS version 8.15
   Hyper-Threading Technology enabled (default)
   Intel Turbo Boost Technology enabled (default)
   Intel Turbo Boost Technology activated in the OS via
      /etc/init.d/acpid start
      /etc/init.d/powersaved start
      powersave -f

Base Compiler Invocation

C benchmarks:
   icc

C++ benchmarks:
   126.lammps: icpc

Fortran benchmarks:
   ifort

Benchmarks using both Fortran and C:
   icc ifort

Base Portability Flags

121.pop2: -DSPEC_MPI_CASE_FLAG
127.wrf2: -DSPEC_MPI_CASE_FLAG -DSPEC_MPI_LINUX

Base Optimization Flags

C benchmarks:
   -O3 -ipo -xT -no-prec-div

C++ benchmarks:
**Base Optimization Flags (Continued)**

126.lammps: -O3 -ipo -xT -no-prec-div -ansi-alias

Fortran benchmarks:
-03 -ipo -xT -no-prec-div

Benchmarks using both Fortran and C:
-03 -ipo -xT -no-prec-div

**Base Other Flags**

C benchmarks:
-1mpi

C++ benchmarks:
126.lammps: -1mpi

Fortran benchmarks:
-1mpi

Benchmarks using both Fortran and C:
-1mpi

The flags file that was used to format this result can be browsed at:
http://www.spec.org/mpi2007/flags/EM64T_Intel101_flags.20080611.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/EM64T_Intel101_flags.20080611.xml