## SPECmpiM2007 Result

**SGI**

SGI Altix ICE 8400EX  
(Intel Xeon X5680, 3.33 GHz)

**SPECmpiM_peak2007 = Not Run**

**SPECmpiM_base2007 = 51.1**

**MPI2007 license:** 4  
**Test date:** Sep-2010  
**Test sponsor:** SGI  
**Hardware Availability:** May-2010  
**Tested by:** SGI  
**Software Availability:** Oct-2010

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>55.6</td>
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<td>96.5</td>
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<tr>
<td>113.GemsFDTD</td>
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<td>121.pop2</td>
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<td>122.tachyon</td>
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<tr>
<td>126.lammps</td>
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<tr>
<td>127.wrf2</td>
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<tr>
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</tr>
</tbody>
</table>

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.
**SPEC MPIM2007 Result**

**SGI**

SGI Altix ICE 8400EX (Intel Xeon X5680, 3.33 GHz)

**SPECmpiM_peak2007 = Not Run**

**SPECmpiM_base2007 = 51.1**

Test date: Sep-2010

Hardware Availability: May-2010

Software Availability: Oct-2010

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### Results Table (Continued)

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<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>130.socorro</td>
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<td>72.9</td>
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<td>73.4</td>
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<td>73.3</td>
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<td>137.lu</td>
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<td>82.0</td>
<td>44.8</td>
<td>82.0</td>
<td>44.9</td>
<td>81.8</td>
</tr>
</tbody>
</table>

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### Hardware Summary

**Type of System:** Homogeneous

**Compute Node:** SGI Altix ICE 8400EX Compute Node

**Interconnects:**
- InfiniBand (MPI)
- InfiniBand (I/O)

**File Server Node:** SGI InfiniteStorage Nexis 2000 NAS

**Total Compute Nodes:** 32

**Total Chips:** 64

**Total Cores:** 384

**Total Threads:** 768

**Total Memory:** 768 GB

**Base Ranks Run:** 384

**Minimum Peak Ranks:** --

**Maximum Peak Ranks:** --

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### Node Description: SGI Altix ICE 8400EX Compute Node

**Hardware**

- **Number of nodes:** 32
- **Uses of the node:** compute
- **Vendor:** SGI
- **Model:** SGI Altix ICE 8400EX (Intel Xeon X5680, 3.33 GHz)
- **CPU Name:** Intel Xeon X5680
- **CPU(s) orderable:** 1-2 chips
- **Chips enabled:** 2
- **Cores enabled:** 12
- **Cores per chip:** 6
- **Threads per core:** 2
- **CPU Characteristics:** Six Core, 3.33 GHz, 6.4 GT/s QPI Intel Turbo Boost Technology up to 3.6 GHz Hyper-Threading Technology enabled
- **CPU MHz:** 3333
- **Primary Cache:** 32 KB I + 32 KB D on chip per core
- **Secondary Cache:** 256 KB I+D on chip per core
- **L3 Cache:** 12 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 24 GB (6*4GB DDR3-1333 CL9 RDIMMs)
- **Disk Subsystem:** None
- **Other Hardware:** None
- **Adapter:** Mellanox MT26428 ConnectX IB QDR (PCIe x8 Gen2 5 GT/s)
- **Number of Adapters:** 2

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### Software Summary

- **C Compiler:** Intel C Compiler for Linux Version 11.1, Build 20100414
- **C++ Compiler:** Intel C++ Compiler for Linux Version 11.1, Build 20100414
- **Fortran Compiler:** Intel Fortran Compiler for Linux Version 11.1, Build 20100414
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **MPI Library:** SGI MPT 2.02 Beta
- **Other MPI Info:** OFED 1.4.2
- **Pre-processors:** None
- **Other Software:** None

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**Continued on next page**
**SPEC MPIM2007 Result**

*SGI*

SGI Altix ICE 8400EX  
(Inel Xeon X5680, 3.33 GHz)

**SPECmpiM_peak2007 = Not Run**  
**SPECmpiM_base2007 = 51.1**

<table>
<thead>
<tr>
<th>MPI2007 license:</th>
<th>4</th>
<th>Test date:</th>
<th>Sep-2010</th>
</tr>
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<tbody>
<tr>
<td>Test sponsor:</td>
<td>SGI</td>
<td>Hardware Availability:</td>
<td>May-2010</td>
</tr>
<tr>
<td>Tested by:</td>
<td>SGI</td>
<td>Software Availability:</td>
<td>Oct-2010</td>
</tr>
</tbody>
</table>

**Node Description: SGI Altix ICE 8400EX Compute Node**

<table>
<thead>
<tr>
<th>Slot Type:</th>
<th>PCIe x8 Gen2</th>
<th>Software:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Rate:</td>
<td>InfiniBand 4x QDR</td>
<td>Adapter:</td>
</tr>
<tr>
<td>Ports Used:</td>
<td>1</td>
<td>Mellanox MT26418 ConnectX, MT25208 InfiniHost III</td>
</tr>
<tr>
<td>Interconnect Type:</td>
<td>InfiniBand</td>
<td>(PCle x8 Gen2 5 GT/s, PCIe x8 Gen1 2.5 GT/s)</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:</td>
<td>1</td>
</tr>
<tr>
<td>Uses of the node:</td>
<td>filesystem</td>
</tr>
<tr>
<td>Vendor:</td>
<td>SGI</td>
</tr>
<tr>
<td>Model:</td>
<td>SGI Altix ICE 270 (Intel Xeon X5670, 2.93 GHz)</td>
</tr>
<tr>
<td>CPU Name:</td>
<td>Intel Xeon X5670</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1-2 chips</td>
</tr>
<tr>
<td>Chips enabled:</td>
<td>2</td>
</tr>
<tr>
<td>Cores enabled:</td>
<td>12</td>
</tr>
<tr>
<td>Cores per chip:</td>
<td>6</td>
</tr>
<tr>
<td>Threads per core:</td>
<td>2</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.33 GHz Hyper-Threading Technology enabled</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2933</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>256 KB I+D on chip per chip</td>
</tr>
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<td>L3 Cache:</td>
<td>12 MB I+D on chip per chip</td>
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<td>Number of Adapters:</td>
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</tr>
<tr>
<td>Slot Type:</td>
<td>PCIe x8 Gen2, PCIe x8 Gen1</td>
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<tr>
<td>Data Rate:</td>
<td>InfiniBand 4x DDR</td>
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<tr>
<td>Ports Used:</td>
<td>2</td>
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<tr>
<td>Interconnect Type:</td>
<td>InfiniBand</td>
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</tbody>
</table>

**Interconnect Description: InfiniBand (MPI)**

<table>
<thead>
<tr>
<th>Hardware:</th>
<th>Software:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vendor:</td>
<td>Mellanox Technologies and SGI</td>
</tr>
<tr>
<td>Model:</td>
<td>MT26428 ConnectX</td>
</tr>
<tr>
<td>Switch Model:</td>
<td>SGI QDR_1.5_HYPR_2454 with Mellanox Device 48438 (Infiniscale IV)</td>
</tr>
<tr>
<td>Number of Switches:</td>
<td>32</td>
</tr>
<tr>
<td>Number of Ports:</td>
<td>36</td>
</tr>
</tbody>
</table>

Continued on next page
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SGI Altix ICE 8400EX  
(Intel Xeon X5680, 3.33 GHz)  

SPECmpiM_peak2007 = Not Run  
SPECmpiM_base2007 = 51.1  

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

Test date: Sep-2010  
Hardware Availability: May-2010  
Software Availability: Oct-2010  

Interconnect Description: InfiniBand (MPI)

Data Rate: InfiniBand 4x QDR  
Firmware: 5030005  
Topology: Enhanced Hypercube  
Primary Use: MPI traffic

Interconnect Description: InfiniBand (I/O)

Hardware

Vendor: Mellanox Technologies and SGI  
Model: MT26428 ConnectX  
Switch Model: SGI QDR_1.5_HYPR_2454 with Mellanox Device 48438 (Infiniscale IV)  
Number of Switches: 16  
Number of Ports: 36  
Data Rate: InfiniBand 4x QDR  
Firmware: 5030005  
Topology: Enhanced Hypercube  
Primary Use: I/O traffic

Software

Submit Notes

The config file option 'submit' was used.

General Notes

Software environment:

export MPI_REQUEST_MAX=65536  
export MPI_TYPE_MAX=32768  
export MPI_BUFS_THRESHOLD=1  
export MPI_IB_RAILS=2  
ulimit -s unlimited

BIOS settings:

AMI BIOS version 080016  
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

Job Placement:

Each MPI job was assigned to a topologically compact set of nodes, i.e. the minimal needed number of switches was used for each job: 2 switches for 96 ranks, 4 switches for 192 ranks, 8 switches for 384 ranks, 16 switches for 768 ranks, 32 switches for 1536 ranks.
SGI
SGI Altix ICE 8400EX
(Intel Xeon X5680, 3.33 GHz)

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**MPI2007 license:** 4
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### 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 -xSSE4.2 -no-prec-div`
- C++ benchmarks:
  - `126.lammps: -O3 -xSSE4.2 -no-prec-div -ansi-alias`
- Fortran benchmarks:
  - `-O3 -xSSE4.2 -no-prec-div`
- Benchmarks using both Fortran and C:
  - `-O3 -xSSE4.2 -no-prec-div`

### Base Other Flags

- C benchmarks: `-lmpi`
- C++ benchmarks:
  - `126.lammps: -lmpi`
- Fortran benchmarks: `-lmpi`

Continued on next page
### SGI

**SGI Altix ICE 8400EX**  
(Intel Xeon X5680, 3.33 GHz)

| SPECmpiM_peak2007 | 51.1 |
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### Base Other Flags (Continued)

Benchmarks using both Fortran and C:  
`-lmpi`

The flags file that was used to format this result can be browsed at  
http://www.spec.org/mpi2007/flags/SGI_x86_64_Intel1111_flags.html

You can also download the XML flags source by saving the following link:  
http://www.spec.org/mpi2007/flags/SGI_x86_64_Intel1111_flags.xml

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For questions about this result, please contact the tester.  
For other inquiries, please contact webmaster@spec.org.

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