## SPECmpirun2007 Result

### SGI

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

- **SPECmpirunM_peak2007 = Not Run**
- **SPECmpirunM_base2007 = 9.22**

**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>
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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 = 9.22**

**Results Table (Continued)**

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<th>Ratio</th>
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<td>Peak</td>
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</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 8400EX Compute Node
- **Interconnects:** InfiniBand (MPI)  
  InfiniBand (I/O)
- **File Server Node:** SGI InfiniteStorage Nexis 2000 NAS
- **Total Compute Nodes:** 4
- **Total Chips:** 8  
  **Total Cores:** 48  
  **Total Threads:** 96  
  **Total Memory:** 96 GB
- **Base Ranks Run:** 48
- **Minimum Peak Ranks:** --  
  **Maximum Peak Ranks:** --

### 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

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

**Hardware**

- **Number of nodes:** 4  
  **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 L1 + 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 core  
  **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

**Software**

- **Adapter:** Mellanox MT26428 ConnectX IB QDR (PCIe x8 Gen2 5 GT/s)  
  **Adapter Driver:** OFED-1.4.2  
  **Adapter Firmware:** 2.7.200  
  **Operating System:** SUSE Linux Enterprise Server 11 SP1,  
  Kernel 2.6.32.13-0.4-default  
  **Local File System:** NFSv3  
  **Shared File System:** NFSv3 IPoIB  
  **System State:** Multi-user, run level 3  
  **Other Software:** SGI ProPack 7 for Linux Service Pack 1,  
  SGI Tempo V 2.1

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SGI

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

SPECmpiM_peak2007 = Not Run
SPECmpiM_base2007 = 9.22

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

Node Description: SGI Altix ICE 8400EX Compute Node

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

Node Description: SGI InfiniteStorage Nexis 2000 NAS

<table>
<thead>
<tr>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of nodes: 1</td>
</tr>
<tr>
<td>Uses of the node: fileserver</td>
</tr>
<tr>
<td>Vendor: SGI</td>
</tr>
<tr>
<td>Model: SGI Altix ICE 8400EX (Intel Xeon X5680, 3.33 GHz)</td>
</tr>
<tr>
<td>CPU Name: Intel Xeon X5680</td>
</tr>
<tr>
<td>CPU(s) orderable: 1-2 chips</td>
</tr>
<tr>
<td>Chips enabled: 2</td>
</tr>
<tr>
<td>Cores enabled: 12</td>
</tr>
<tr>
<td>Cores per chip: 6</td>
</tr>
<tr>
<td>Threads per core: 2</td>
</tr>
<tr>
<td>CPU Characteristics: Intel Turbo Boost Technology up to 3.33 GHz Hyper-Threading Technology enabled</td>
</tr>
<tr>
<td>CPU MHz: 2933</td>
</tr>
<tr>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache: 256 KB I+D on chip per chip</td>
</tr>
<tr>
<td>L3 Cache: 12 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache: None</td>
</tr>
<tr>
<td>Memory: 24 GB (6*4GB DDR3-1333 CL9 DIMMs)</td>
</tr>
<tr>
<td>Disk Subsystem: 8.8 TB RAID 5 60 x 146 GB SAS (Seagate Cheetah 15K.5)</td>
</tr>
<tr>
<td>Other Hardware: None</td>
</tr>
<tr>
<td>Adapter: Mellanox MT26418 ConnectX, MT25208 InfiniHost III Ex (PCIe x8 Gen2 2.5 GT/s, PCIe x8 Gen1 5 GT/s)</td>
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<tr>
<td>Number of Adapters: 2</td>
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<td>Slot Type: PCIe x8 Gen2, PCIe x8 Gen1</td>
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<tr>
<td>Data Rate: InfiniBand 4x DDR</td>
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<tr>
<td>Ports Used: 2</td>
</tr>
<tr>
<td>Interconnect Type: InfiniBand</td>
</tr>
</tbody>
</table>

Software

| Adapter: OFED-1.4.0 |
| Adapter Firmware: 2.6.0 and 5.2.0 |
| Operating System: SUSE Linux Enterprise Server 11 (x86_64) Kernel 2.6.27-19.5-default |
| Local File System: xfs |
| Shared File System: -- |
| System State: Multi-user, run level 3 |
| Other Software: SGI Foundation Software 2 |

Interconnect Description: InfiniBand (MPI)

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

Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/
SGI

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

SPEC mpiM_peak2007 = Not Run
SPEC mpiM_base2007 = 9.22

MPI2007 license: 4
Test sponsor: SGI
Test date: Sep-2010
Tested by: SGI
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,
Continued on next page
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**SPEC mpiM Peak2007 = Not Run**

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</tbody>
</table>

**General Notes (Continued)**

16 switches for 768 ranks, 32 switches for 1536 ranks.

**Base Compiler Invocation**

C benchmarks:

```latex
icc
```

C++ benchmarks:

```latex
126.lammps: icpc
```

Fortran benchmarks:

```latex
ifort
```

Benchmarks using both Fortran and C:

```latex
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:

```latex
-O3 -xSSE4.2 -no-prec-div
```

C++ benchmarks:

```latex
126.lammps: -O3 -xSSE4.2 -no-prec-div -ansi-alias
```

Fortran benchmarks:

```latex
-O3 -xSSE4.2 -no-prec-div
```

Benchmarks using both Fortran and C:

```latex
-O3 -xSSE4.2 -no-prec-div
```

**Base Other Flags**

C benchmarks:

```latex
-1mpi
```

C++ benchmarks:

```latex

```

Continued on next page
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Base Other Flags (Continued)

126.lammps: \(-lmpi\)

Fortran benchmarks:
\(-lmpi\)

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\_Intel111\_flags.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/SGI\_x86\_64\_Intel111\_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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