### SPEC® MPIM2007 Result

**SGI**

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

**SPECmpiM_base2007 =** 4.81

**SPECmpiM_peak2007 =** Not Run

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

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### 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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</tbody>
</table>

**Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.**
SGI
SGI Altix ICE 8400EX
(Intel Xeon X5680, 3.33 GHz)

SPECmpM_peak2007 = Not Run
SPECmpM_base2007 = 4.81

Results Table (Continued)

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<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Ratio</th>
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<td></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 8400EX 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: 24
Total Threads: 48
Total Memory: 48 GB
Base Ranks Run: 24
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: 2
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 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

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

Continued on next page
## SPEC MPI2007 Result

### SGI

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

<table>
<thead>
<tr>
<th>SPECmpiM_peak2007 = Not Run</th>
<th>SPECmpiM_base2007 = 4.81</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MPI2007 license:</strong> 4</td>
<td><strong>Test date:</strong> Sep-2010</td>
</tr>
<tr>
<td><strong>Test sponsor:</strong> SGI</td>
<td><strong>Hardware Availability:</strong> May-2010</td>
</tr>
<tr>
<td><strong>Tested by:</strong> SGI</td>
<td><strong>Software Availability:</strong> Oct-2010</td>
</tr>
</tbody>
</table>

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

- **Slot Type:** PCIe x8 Gen2
- **Data Rate:** InfiniBand 4x QDR
- **Ports Used:** 1
- **Interconnect Type:** InfiniBand

### Node Description: SGI InfiniteStorage Nexis 2000 NAS

#### Hardware
- **Number of nodes:** 1
- **Uses of the node:** fileserver
- **Vendor:** SGI
- **Model:** SGI Altix XE 270 (Intel Xeon X5670, 2.93 GHz)
- **CPU Name:** Intel Xeon X5670
- **CPU(s) orderable:** 1-2 chips
- **Chips enabled:** 2
- **Cores enabled:** 12
- **Cores per chip:** 6
- **Threads per core:** 2
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.33 GHz  
Hyper-Threading Technology enabled
- **CPU MHz:** 2933
- **Primary Cache:** 32 KB I + 32 KB D on chip per core
- **Secondary Cache:** 256 KB I+D on chip per chip
- **L3 Cache:** 12 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 24 GB (6*4GB DDR3-1333 CL9 DIMMs)
- **Disk Subsystem:** 8.8 TB RAID 5  
60 x 146 GB SAS (Seagate Cheetah 15K.5)
- **Other Hardware:** None
- **Adapter:** Mellanox MT26418 ConnectX, MT25208 InfiniHost III Ex  
(P PCIe x8 Gen2 5 GT/s, PCIe x8 Gen1 2.5 GT/s)
- **Adapter Driver:** 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

#### Software

#### Interconnect Description: InfiniBand (MPI)

| **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:** 32 |
| **Number of Ports:** 36 |

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SGI

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

SPECmpiM_peak2007 = Not Run
SPECmpiM_base2007 = 4.81

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)

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
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<tbody>
<tr>
<td>Vendor: Mellanox Technologies and SGI</td>
<td>Software environment:</td>
</tr>
<tr>
<td>Model: MT26428 ConnectX</td>
<td>export MPI_REQUEST_MAX=65536</td>
</tr>
<tr>
<td>Switch Model: SGI QDR_1.5_HYPR_2454 with Mellanox Device 48438 (Infiniscale IV)</td>
<td>export MPI_TYPE_MAX=32768</td>
</tr>
<tr>
<td>Number of Switches: 16</td>
<td>export MPI_BUFS_THRESHOLD=1</td>
</tr>
<tr>
<td>Number of Ports: 36</td>
<td>export MPI_IB_RAILS=2</td>
</tr>
<tr>
<td>Data Rate: InfiniBand 4x QDR</td>
<td>ulimit -s unlimited</td>
</tr>
<tr>
<td>Firmware: 5030005</td>
<td>BIOS settings:</td>
</tr>
<tr>
<td>Topology: Enhanced Hypercube</td>
<td>AMI BIOS version 080016</td>
</tr>
<tr>
<td>Primary Use: I/O traffic</td>
<td>Hyper-Threading Technology enabled (default)</td>
</tr>
</tbody>
</table>

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
SGI

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

SPECmpiM_result = Not Run
SPECmpiM_base2007 = 4.81

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

General Notes (Continued)

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

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:
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_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