**SPEC® MPIM2007 Result**

**SGI**

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

**SPECmpiM_peak2007 = Not Run**

**SPECmpiM_base2007 = 32.3**

**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>
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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.
Results Table (Continued)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>86.4</td>
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</tbody>
</table>

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

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
- **OFED**: 1.4.2
- **Pre-processors**: None
- **Other Software**: None

Node Description: SGI Altix ICE 8400EX Compute Node

### Hardware

- **Number of nodes**: 16
- **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
SGI

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

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 32.3

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

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
(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)

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: 32
Number of Ports: 36

Software

Continued on next page
SPEC MPIM2007 Result

SGI

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

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Interconnect Description: InfiniBand (MPI)

<table>
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<tr>
<th>Data Rate</th>
<th>InfiniBand 4x QDR</th>
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</thead>
<tbody>
<tr>
<td>Firmware</td>
<td>5030005</td>
</tr>
<tr>
<td>Topology</td>
<td>Enhanced Hypercube</td>
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<tr>
<td>Primary Use</td>
<td>MPI traffic</td>
</tr>
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Interconnect Description: InfiniBand (I/O)

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<th>Software</th>
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<tr>
<td>Vendor:</td>
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</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.
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(Intel Xeon X5680, 3.33 GHz)

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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:

Continued on next page
SPEC MPIM2007 Result

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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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