## SPEC® MPIM2007 Result

**SGI**

SGI Altix ICE 8400EX
(Intel Xeon X5690, 3.46 GHz)

**SPECmpiM_peak2007 = Not Run**

**SPECmpiM_base2007 = 4.96**

### 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>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Ratio</th>
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</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 X5690, 3.46 GHz)

SPECmpiM_peak2007 = Not Run
SPECmpiM_base2007 = 4.96

Test date: Jun-2011
Hardware Availability: Feb-2011
Software Availability: Aug-2011

Results Table (Continued)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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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
Interconnect: InfiniBand (MPI and 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++ Composer XE 2011 for Linux, Version 12.0.3.174 Build 20110309
C++ Compiler: Intel C++ Composer XE 2011 for Linux, Version 12.0.3.174 Build 20110309
Fortran Compiler: Intel Fortran Composer XE 2011 for Linux, Version 12.0.3.174 Build 20110309
Base Pointers: 64-bit
Peak Pointers: 64-bit
MPI Library: SGI MPT 2.04 Patch 10789
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 X5690, 3.46 GHz)
CPU Name: Intel Xeon X5690
CPU(s) orderable: 1-2 chips
Chips enabled: 2
Cores enabled: 12
Cores per chip: 6
Threads per core: 2
CPU Characteristics: Six Core, 3.46 GHz, 6.4 GT/s QPI
       Intel Turbo Boost Technology up to 3.73 GHz
       Hyper-Threading Technology enabled
       3467
CPU MHz: 32 KB L1 + 32 KB D on chip per core
Primary Cache: 256 KB I+D on chip per core
Secondary Cache: 12 MB I+D on chip per chip
L3 Cache: None
Other Cache: None
Memory: 24 GB (6 x 4 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem: None
Other Hardware: None
Adapter: Mellanox MT26428 ConnectX IB QDR (PCIe x8 Gen2 5 GT/s)
Number of Adapters: 2
Slot Type: PCIe x8 Gen2

Software

Adapter: Mellanox MT26428 ConnectX IB QDR (PCIe x8 Gen2 5 GT/s)
Adapter Driver: OFED-1.4.2
Adapter Firmware: 2.7.8200
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 7SP1 for Linux,
Build 701r3.sles11-1005252113
SGI Tempo Compute Node 2.1,
Build 701r3.sles11-1005252113

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## SPEC MPI2007 Result

**SGI**

SGI Altix ICE 8400EX  
(Intel Xeon X5690, 3.46 GHz)

**SPECmpiM\_peak2007 = Not Run**

**SPECmpiM\_base2007 = 4.96**

<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 8400EX Compute Node

<table>
<thead>
<tr>
<th>Data Rate</th>
<th>InfiniBand 4x QDR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ports Used</td>
<td>1</td>
</tr>
<tr>
<td>Interconnect Type</td>
<td>InfiniBand</td>
</tr>
</tbody>
</table>

### Node Description: SGI InfiniteStorage Nexis 2000 NAS

#### Hardware

<table>
<thead>
<tr>
<th>Number of nodes:</th>
<th>1</th>
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</thead>
<tbody>
<tr>
<td>Uses of the node:</td>
<td>fileserver</td>
</tr>
<tr>
<td>Vendor:</td>
<td>SGI</td>
</tr>
<tr>
<td>Model:</td>
<td>SGI Altix XE 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>
</tbody>
</table>

**CPU Characteristics:**

- Intel Turbo Boost Technology up to 3.33 GHz
- Hyper-Threading Technology enabled

**CPU MHz:** 2933

**Primary Cache:** 32 KB L1 + 32 KB D on chip per core

**Secondary Cache:** 256 KB L1+D on chip per chip

**L3 Cache:** 12 MB L1+D on chip per chip

**Other Cache:** None

**Memory:** 96 GB (12*8 GB DDR3-1333 CL9 DIMMs)

**Disk Subsystem:** 8.8 TB RAID 5

**Other Hardware:** None

**Adapter:** Mellanox MT26428 ConnectX IB QDR (PCIe x8 Gen2 5 GT/s)

**Number of Adapters:** 2

**Slot Type:** PCIe x8 Gen2

**Data Rate:** InfiniBand 4x QDR

**Ports Used:** 2

**Interconnect Type:** InfiniBand

#### Software

- Adapter: OFED-1.4.0
- Operating System: SUSE Linux Enterprise Server 11 (x86_64)
- Local File System: xfs
- Other Software: SGI Foundation Software 2, Build 700r3.sles11-1004061553

### Interconnect Description: InfiniBand (MPI and I/O)

#### Hardware

<table>
<thead>
<tr>
<th>Vendor:</th>
<th>Mellanox Technologies and SGI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model:</td>
<td>None</td>
</tr>
<tr>
<td>Switch Model:</td>
<td>SGI QDR, 1.5, HYPR, 2454 with Mellanox Device 48438 (Infiniscale IV)</td>
</tr>
</tbody>
</table>

**Number of Switches:** 2

**Number of Ports:** 36

**Data Rate:** InfiniBand 4x QDR

#### Software

**Operating System:** SUSE Linux Enterprise Server 11 (x86_64)

**Other Software:** SGI Foundation Software 2, Build 700r3.sles11-1004061553

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

Interconnect Description: InfiniBand (MPI and I/O)
Firmware: 5040005
Topology: Enhanced Hypercube
Primary Use: MPI and I/O traffic

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 up to 96 ranks,
4 switches for 192 ranks, 8 switches for 384 ranks,
16 switches for 768 ranks.

Additional notes regarding interconnect:
The Infiniband network consists of two independent planes,
with half the switches in the system allocated to each plane.
I/O traffic is restricted to one plane, while MPI traffic can
use both planes.

Base Compiler Invocation
C benchmarks:
icc

C++ benchmarks:

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Base Compiler Invocation (Continued)

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

Benchmarks using both Fortran and C:
-lmpi
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The flags file that was used to format this result can be browsed at
http://www.spec.org/mpi2007/flags/SGI_x86_64_Intel12_flags.html
You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/SGI_x86_64_Intel12_flags.xml

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

Tested with SPEC MPI2007 v2.0.1.
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