### SGI

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

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**SPECmpiM_peak2007 = Not Run**  
**SPECmpiM_base2007 = 18.6**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
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</thead>
<tbody>
<tr>
<td>104.milc</td>
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<td>15.9</td>
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<tr>
<td>107.leslie3d</td>
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<td>16.9</td>
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<tr>
<td>113.GemsFDTD</td>
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<tr>
<td>115.fds4</td>
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<td>16.9</td>
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<tr>
<td>121.pop2</td>
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<td>15.8</td>
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<tr>
<td>122.tachyon</td>
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<td>15.8</td>
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<tr>
<td>126.lammps</td>
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<tr>
<td>132.zeusmp2</td>
<td>96</td>
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<tr>
<td>137.lu</td>
<td>96</td>
<td>21.9</td>
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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.
## Results Table (Continued)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
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<tr>
<td>137.lu</td>
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<td>168</td>
<td>21.9</td>
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<td>21.9</td>
<td>167</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
- **Interconnect:** InfiniBand (MPI and I/O)
- **File Server Node:** SGI InfiniteStorage Nexis 2000 NAS
- **Total Compute Nodes:** 8
- **Total Chips:** 16
- **Total Cores:** 96
- **Total Threads:** 192
- **Total Memory:** 192 GB
- **Base Ranks Run:** 96
- **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
- **MPI Library:** SGI MPT 2.04 Patch 10789
- **MPI Library:** OFED 1.4.2
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other MPI Info:** OFED 1.4.2
- **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
- **Other Software:** SGI Tempo Compute Node 2.1, Build 701r3.sles11-1005252113

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

#### Hardware
- **Number of nodes:** 8
- **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
- **Secondary Cache:** 256 KB L1+D on chip per core
- **L3 Cache:** 12 MB I+D on chip per chip
- **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
- **Other Software:** SGI Tempo Compute Node 2.1, Build 701r3.sles11-1005252113
**SGI**

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

**SPECmpiM_peak2007 = Not Run**  
**SPECmpiM_base2007 = 18.6**

**MPI2007 license:** 4  
**Test date:** Jun-2011

**Test sponsor:** SGI  
**Hardware Availability:** Feb-2011

**Tested by:** SGI  
**Software Availability:** Aug-2011

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

- Data Rate: InfiniBand 4x QDR
- Ports Used: 1
- Interconnect Type: InfiniBand

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**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:** 96 GB (12*8 GB 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 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 Driver:** OFED-1.4.0
- **Adapter Firmware:** 2.7.0
- **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, Build 700r3.sles11-1004061553

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

**Hardware**

- **Vendor:** Mellanox Technologies and SGI
- **Model:** None
- **Switch Model:** SGI QDR, 1.5_HYPR, 2454 with Mellanox Device 48438  
  (Infiniscell IV)
- **Number of Switches:** 2
- **Number of Ports:** 36
- **Data Rate:** InfiniBand 4x QDR

**Software**

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

SPECmpiM_peak2007 = Not Run
SPECmpiM_base2007 = 18.6

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:

Continued on next page
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:
-03 -xSSE4.2 -no-prec-div

C++ benchmarks:
126.lammps: -03 -xSSE4.2 -no-prec-div -ansi-alias

Fortran benchmarks:
-03 -xSSE4.2 -no-prec-div

Benchmarks using both Fortran and C:
-03 -xSSE4.2 -no-prec-div

Base Other Flags

C benchmarks:
-1mpi

C++ benchmarks:
126.lammps: -1mpi

Fortran benchmarks:
-1mpi

Benchmarks using both Fortran and C:
-1mpi
SPEC MPI2007 Result

SGI

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(Intel Xeon X5690, 3.46 GHz)

SPECmpiM_peak2007 = Not Run
SPECmpiM_base2007 = 18.6

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

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

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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