**SPEC® MPI2007 Result**

SGI

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

**SPECmpiM_peak2007 = Not Run**

**SPECmpiM_base2007 = 53.2**

**MPI2007 license:** 4

**Test date:** Jun-2011

**Hardware Availability:** Feb-2011

**Test sponsor:** SGI

**Software Availability:** Aug-2011

**Tested by:** SGI

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### Results Table

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<th>Seconds</th>
<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 Altix ICE 8400EX
(Intel Xeon X5690, 3.46 GHz)

SPECmpiM_peak2007 = Not Run
SPECmpiM_base2007 = 53.2

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: 32
Total Chips: 64
Total Cores: 384
Total Threads: 768
Total Memory: 768 GB
Base Ranks Run: 384
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: 32
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
Hyper-Threading Technology enabled
CPU MHz: 3467
Primary Cache: 32 KB I + 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 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

Results Table (Continued)

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### SGI

#### SGI Altix ICE 8400EX

(Intel Xeon X5690, 3.46 GHz)

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<td>Tested by: SGI</td>
<td>Software Availability: Aug-2011</td>
</tr>
</tbody>
</table>

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

- **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 L1 + 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 (12x8 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
- **Shared File System:** --
- **System State:** Multi-user, run level 3
- **Other Software:** SGI Foundation Software 2, Build 700r3.sles11-1004061553

#### 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 (Infiniscale IV)
- **Number of Switches:** 8
- **Number of Ports:** 36
- **Data Rate:** InfiniBand 4x QDR

**Software**
- **Adapter:** OFED-1.4.0
- **Operating System:** SUSE Linux Enterprise Server 11 (x86_64)
- **Local File System:** xfs
- **Shared File System:** --
- **System State:** Multi-user, run level 3
- **Other Software:** SGI Foundation Software 2, Build 700r3.sles11-1004061553

Continued on next page
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SGI Altix ICE 8400EX
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Test date: Jun-2011
Hardware Availability: Feb-2011
Software Availability: Aug-2011

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-Thread 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:
SGI

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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
## SPEC MPI2007 Result

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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.

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