SGI

SGI Rackable C2112-4RP4
(Intel Xeon E5-2697 v2, 2.70 GHz)

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

SPECmpiM_peak2007 = Not Run
SPECmpiM_base2007 = 40.7

Test date: Aug-2013
Hardware Availability: Sep-2013
Software Availability: Jun-2013

### 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>Seconds</th>
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<tr>
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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.
**SPEC MPI2007 Result**

**SGI Rackable C2112-4RP4**

*Intel Xeon E5-2697 v2, 2.70 GHz*

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**SPECmpiM_peak2007 = Not Run**

**SPECmpiM_base2007 = 40.7**

**Test date:** Aug-2013

**Hardware Availability:** Sep-2013

**Software Availability:** Jun-2013

---

**Results Table (Continued)**

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<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Ratio</th>
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<tbody>
<tr>
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<td>192</td>
<td>57.6</td>
<td>66.3</td>
<td>58.7</td>
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<tr>
<td>132.zeusmp2</td>
<td>192</td>
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<td>45.4</td>
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<td>137.lu</td>
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<td>69.1</td>
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<td>53.2</td>
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<td></td>
<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 Rackable C2112-4RP4 Compute Node

Interconnect: InfiniBand (MPI and I/O)

File Server Node: SGI MIS Server

Total Compute Nodes: 8

Total Chips: 16

Total Cores: 192

Total Threads: 384

Total Memory: 1 TB

Base Ranks Run: 192

Minimum Peak Ranks: --

Maximum Peak Ranks: --

---

**Software Summary**

C Compiler: Intel C++ Composer XE 2013 for Linux, Version 14.0.0.051 Build 20130529

C++ Compiler: Intel C++ Composer XE 2013 for Linux, Version 14.0.0.051 Build 20130529

Fortran Compiler: Intel Fortran Composer XE 2013 for Linux, Version 14.0.0.051 Build 20130529

Base Pointers: 64-bit

Peak Pointers: Not Applicable

MPI Library: SGI MPT 2.08 Patch 11012

Other MPI Info: OFED 1.5.2

Pre-processors: None

Other Software: None

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**Node Description: SGI Rackable C2112-4RP4 Compute Node**

**Hardware**

Number of nodes: 8

Uses of the node: compute

Vendor: SGI

Model: SGI Rackable C2112-4RP4 (Intel Xeon E5-2697 v2, 2.70GHz)

CPU Name: Intel Xeon E5-2697 v2

CPU(s) orderable: 1-2 chips

Chips enabled: 2

Cores enabled: 24

Cores per chip: 12

Threads per core: 2

CPU Characteristics: Twelve Core, 2.7 GHz, 8.0 GT/s QPI

CPU MHz: 2700

Primary Cache: 32 KB I + 32 KB D on chip per core

Secondary Cache: 256 KB I+D on chip per core

L3 Cache: 30 MB I+D on chip per chip, 30 MB shared / 12 cores

Other Cache: None

Memory: 128 GB (8 x 16 GB 2Rx4 PC3-14900R-13, ECC)

Disk Subsystem: None

Other Hardware: None

Adapter: Mellanox MT27500 with ConnectX-3 ASIC (PCIe x8 Gen3 8.0 GT/s)

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**Software**

Adapter: Mellanox MT27500 with ConnectX-3 ASIC (PCIe x8 Gen3 8.0 GT/s)

Adapter Driver: OFED-1.5.2

Adapter Firmware: 2.10.2370

Operating System: SUSE Linux Enterprise Server 11 SP2, Kernel 3.0.74-0.6.6-default

Local File System: xfs

Shared File System: NFSv3 IPoIB

System State: Multi-user, run level 3

Other Software: SGI Accelerate 1.6, Build 708r14.sles11sp2-1304102205

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Continued on next page
### SPEC MPIM2007 Result

**SGI**

SGI Rackable C2112-4RP4  
(Intel Xeon E5-2697 v2, 2.70 GHz)

<table>
<thead>
<tr>
<th><strong>MPI2007 license:</strong></th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td><strong>Test sponsor:</strong></td>
<td>SGI</td>
</tr>
<tr>
<td><strong>Tested by:</strong></td>
<td>SGI</td>
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</table>

**SPECmpiM_peak2007 = Not Run**  
**SPECmpiM_base2007 = 40.7**

**Test date:** Aug-2013

**Hardware Availability:** Sep-2013  
**Software Availability:** Jun-2013

### Node Description: SGI Rackable C2112-4RP4 Compute Node

<table>
<thead>
<tr>
<th><strong>Number of Adapters:</strong></th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Slot Type:</strong></td>
<td>PCIe x8 Gen3</td>
</tr>
<tr>
<td><strong>Data Rate:</strong></td>
<td>InfiniBand 4x FDR</td>
</tr>
<tr>
<td><strong>Ports Used:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Interconnect Type:</strong></td>
<td>InfiniBand</td>
</tr>
</tbody>
</table>

### Node Description: SGI MIS Server

**Hardware**

<table>
<thead>
<tr>
<th><strong>Number of nodes:</strong></th>
<th>1</th>
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</thead>
<tbody>
<tr>
<td><strong>Uses of the node:</strong></td>
<td>fileserver</td>
</tr>
<tr>
<td><strong>Vendor:</strong></td>
<td>SGI</td>
</tr>
<tr>
<td><strong>Model:</strong></td>
<td>SGI MIS Server (Intel Xeon X2670, 2.60 GHz)</td>
</tr>
<tr>
<td><strong>CPU Name:</strong></td>
<td>Intel Xeon E5-2670</td>
</tr>
<tr>
<td><strong>CPU(s) orderable:</strong></td>
<td>1-2 chips</td>
</tr>
<tr>
<td><strong>Chips enabled:</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Cores enabled:</strong></td>
<td>16</td>
</tr>
<tr>
<td><strong>Cores per chip:</strong></td>
<td>8</td>
</tr>
<tr>
<td><strong>Threads per core:</strong></td>
<td>2</td>
</tr>
</tbody>
</table>
| **CPU Characteristics:** | Intel Turbo Boost Technology up to 3.33 GHz  
Hyper-Threading Technology enabled |
| **CPU MHz:**         | 2600 |
| **Primary Cache:**   | 32 KB I + 32 KB D on chip per core |
| **Secondary Cache:** | 256 KB I+D on chip per chip |
| **L3 Cache:**        | 20 MB I+D on chip per chip |
| **Other Cache:**     | None |
| **Memory:**          | 128 GB (8*16 GB 12800R-11, ECC) |
| **Disk Subsystem:**  | 57.6 TB RAID6  
64 x 900 GB SAS (Western Digital WD9001BKHG 10K) |
| **Other Hardware:**  | None |
| **Adapter:**         | Mellanox MT27500 with ConnectX-3 ASIC  
(P PCIe x8 Gen3 8 GT/s) |
| **Adapter Driver:**  | OFED-1.5.2 |
| **Adapter Firmware:**| 2.11.500 |
| **Operating System:**| SUSE Linux Enterprise Server 11 SP2 (x86_64)  
Kernel 3.0.74-0.6.6-default |
| **Local File System:** | xfs |
| **Shared File System:** | -- |
| **System State:**    | Multi-user, run level 3 |
| **Other Software:**  | SGI Foundation Software 2.8,  
Build 708r14.sles11sp2-1304102205 |

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

**Hardware**

<table>
<thead>
<tr>
<th><strong>Vendor:</strong></th>
<th>Mellanox Technologies</th>
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<tbody>
<tr>
<td><strong>Model:</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Switch Model:</strong></td>
<td>Mellanox SX6025 InfiniBand Switch</td>
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<tr>
<td><strong>Number of Switches:</strong></td>
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<tr>
<td><strong>Number of Ports:</strong></td>
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</tbody>
</table>

**Software**

| **Adapter:**         | Mellanox MT27500 with ConnectX-3 ASIC  
(P PCIe x8 Gen3 8 GT/s) |
| **Adapter Driver:**  | OFED-1.5.2 |
| **Adapter Firmware:**| 2.11.500 |
| **Operating System:**| SUSE Linux Enterprise Server 11 SP2 (x86_64)  
Kernel 3.0.74-0.6.6-default |
| **Local File System:** | xfs |
| **Shared File System:** | -- |
| **System State:**    | Multi-user, run level 3 |
| **Other Software:**  | SGI Foundation Software 2.8,  
Build 708r14.sles11sp2-1304102205 |
SGI

SGI Rackable C2112-4RP4
(Intel Xeon E5-2697 v2, 2.70 GHz)

SPECmpiM_peak2007 = Not Run
SPECmpiM_base2007 = 40.7

Interconnect Description: InfiniBand (MPI and I/O)

<table>
<thead>
<tr>
<th>Data Rate:</th>
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<tbody>
<tr>
<td>Firmware:</td>
<td>9.1.7000</td>
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<tr>
<td>Switch Model:</td>
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<tr>
<td>Number of Switches:</td>
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<td>Number of Ports:</td>
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<tr>
<td>Data Rate:</td>
<td>InfiniBand 4x FDR</td>
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<tr>
<td>Firmware:</td>
<td>9.1.6500</td>
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<tr>
<td>Topology:</td>
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<tr>
<td>Primary Use:</td>
<td>MPI and I/O traffic</td>
</tr>
</tbody>
</table>

Submit Notes

The config file option 'submit' was used.

General Notes

130.socorro (base): "nullify_ptrs" src.alt was used.

Software environment:
export MPI_REQUEST_MAX=65536
export MPI_TYPE_MAX=32768
export MPI_BUFS_THRESHOLD=1
ulimit -s unlimited

Transparent Hugepage : disabled
    Transparent Hugepage is disabled by
    echo never > /sys/kernel/mm/transparent_hugepage/enabled

BIOS settings:
  Intel BIOS version SE5C600.86B.99.99.x067.060720130951
  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

Base Compiler Invocation

C benchmarks:
  icc

C++ benchmarks:

Continued on next page
SPEC MPIM2007 Result

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SGI Rackable C2112-4RP4 (Intel Xeon E5-2697 v2, 2.70 GHz)

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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
130.socorro: -assume nostd_intent_in

Base Optimization Flags

C benchmarks:
-O3 -xAVX -no-prec-div
C++ benchmarks:
126.lammps: -O3 -xAVX -no-prec-div -ansi-alias
Fortran benchmarks:
-O3 -xAVX -no-prec-div
Benchmarks using both Fortran and C:
-O3 -xAVX -no-prec-div

Base Other Flags

C benchmarks:
-lmpi
C++ benchmarks:
126.lammps: -lmpi
Fortran benchmarks:
-lmpi
Benchmarks using both Fortran and C:
-lmpi
SGI
SGI Rackable C2112-4RP4
(Intel Xeon E5-2697 v2, 2.70 GHz)

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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_Intel14_flags.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/SGI_x86_64_Intel14_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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