



# SPEC<sup>®</sup> MPIM2007 Result

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## SGI

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

SPECmpiM\_peak2007 = Not Run

SPECmpiM\_base2007 = 6.51

MPI2007 license: 4

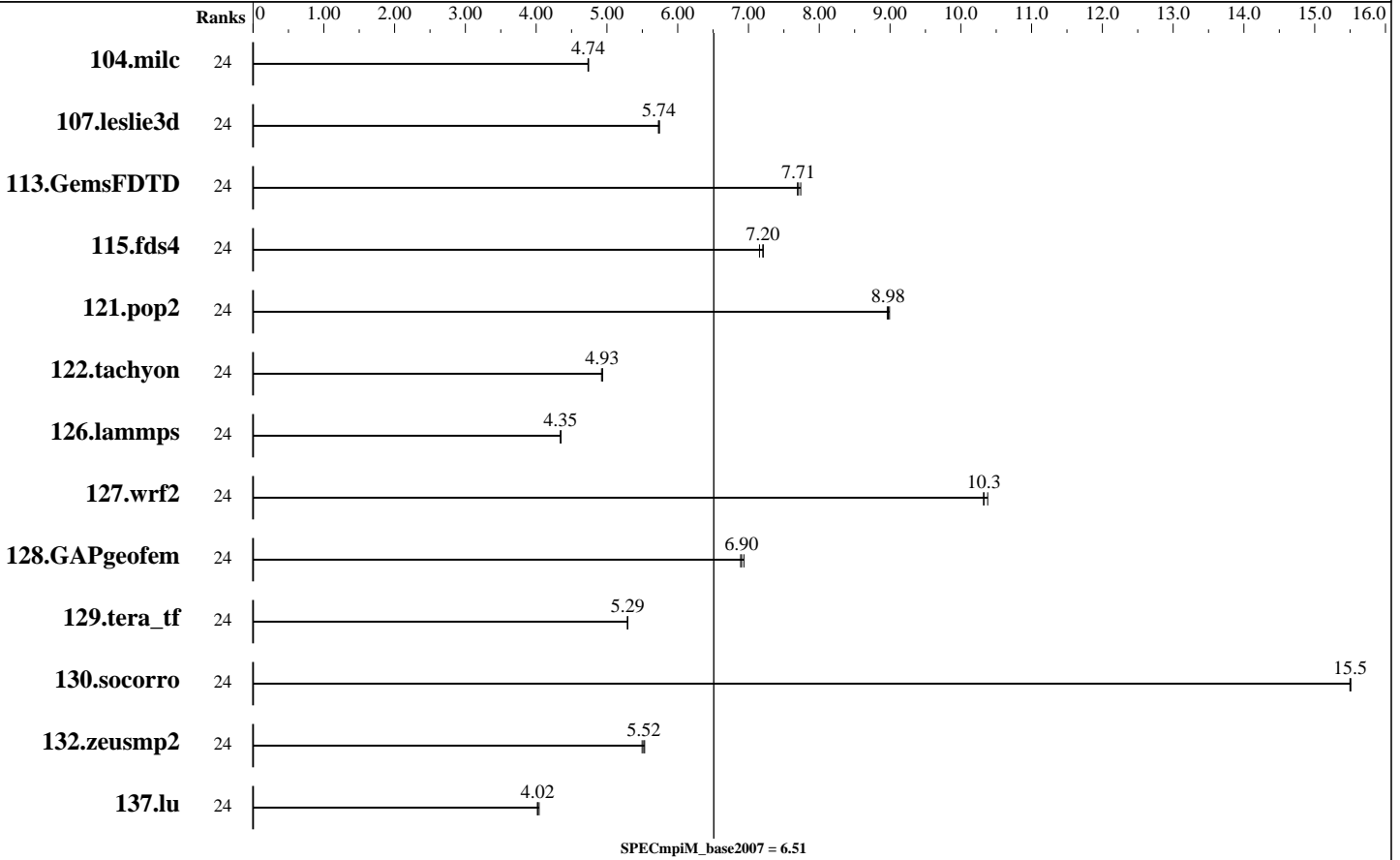
Test sponsor: SGI

Tested by: SGI

Test date: Aug-2013

Hardware Availability: Sep-2013

Software Availability: Jun-2013



## Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	24	<b><u>330</u></b>	<b><u>4.74</u></b>	330	4.74	331	4.73							
107.leslie3d	24	911	5.73	909	5.74	<b><u>910</u></b>	<b><u>5.74</u></b>							
113.GemsFDTD	24	815	7.74	820	7.69	<b><u>818</u></b>	<b><u>7.71</u></b>							
115.fds4	24	271	7.21	<b><u>271</u></b>	<b><u>7.20</u></b>	273	7.16							
121.pop2	24	<b><u>460</u></b>	<b><u>8.98</u></b>	459	8.99	461	8.96							
122.tachyon	24	<b><u>567</u></b>	<b><u>4.93</u></b>	566	4.94	568	4.92							
126.lammps	24	671	4.34	<b><u>671</u></b>	<b><u>4.35</u></b>	670	4.35							
127.wrf2	24	751	10.4	<b><u>755</u></b>	<b><u>10.3</u></b>	755	10.3							
128.GAPgeofem	24	298	6.94	300	6.89	<b><u>299</u></b>	<b><u>6.90</u></b>							
129.tera_tf	24	<b><u>523</u></b>	<b><u>5.29</u></b>	523	5.29	523	5.29							

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.



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## Results Table (Continued)

Benchmark	Base								Peak							
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
130.socorro	24	246	15.5	246	15.5	<b>246</b>	<b>15.5</b>									
132.zeusmp2	24	561	5.53	<b>562</b>	<b>5.52</b>	565	5.50									
137.lu	24	<b>914</b>	<b>4.02</b>	915	4.02	909	4.04									

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: 1  
 Total Chips: 2  
 Total Cores: 24  
 Total Threads: 48  
 Total Memory: 128 GB  
 Base Ranks Run: 24  
 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

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

### Hardware

Number of nodes: 1  
 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 Intel Turbo Boost Technology up to 3.5 GHz Hyper-Threading Technology enabled  
 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)

### 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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Test date: Aug-2013

Test sponsor: SGI

Hardware Availability: Sep-2013

Tested by: SGI

Software Availability: Jun-2013

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

Number of Adapters: 2  
Slot Type: PCIe x8 Gen3  
Data Rate: InfiniBand 4x FDR  
Ports Used: 1  
Interconnect Type: InfiniBand

### Node Description: SGI MIS Server

#### Hardware

Number of nodes: 1  
Uses of the node: fileserver  
Vendor: SGI  
Model: SGI MIS Server (Intel Xeon X2670, 2.60 GHz)  
CPU Name: Intel Xeon E5-2670  
CPU(s) orderable: 1-2 chips  
Chips enabled: 2  
Cores enabled: 16  
Cores per chip: 8  
Threads per core: 2  
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  
(PCIe x8 Gen3 8 GT/s)  
Number of Adapters: 2  
Slot Type: PCIe x8 Gen3  
Data Rate: InfiniBand 4x FDR  
Ports Used: 2  
Interconnect Type: InfiniBand

#### Software

Adapter: Mellanox MT27500 with ConnectX-3 ASIC  
(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

Vendor: Mellanox Technologies  
Model: None  
Switch Model: Mellanox SX6025 InfiniBand Switch  
Number of Switches: 4  
Number of Ports: 36

#### Software

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Tested by: SGI

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Hardware Availability: Sep-2013

Software Availability: Jun-2013

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

Data Rate:	InfiniBand 4x FDR
Firmware:	9.1.7000
Switch Model:	Mellanox SX6036 InfiniBand Switch
Number of Switches:	2
Number of Ports:	36
Data Rate:	InfiniBand 4x FDR
Firmware:	9.1.6500
Topology:	Fat Tree
Primary Use:	MPI and I/O traffic

## 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:

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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



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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](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](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](mailto:webmaster@spec.org).

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