



# 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 = 40.7

MPI2007 license: 4

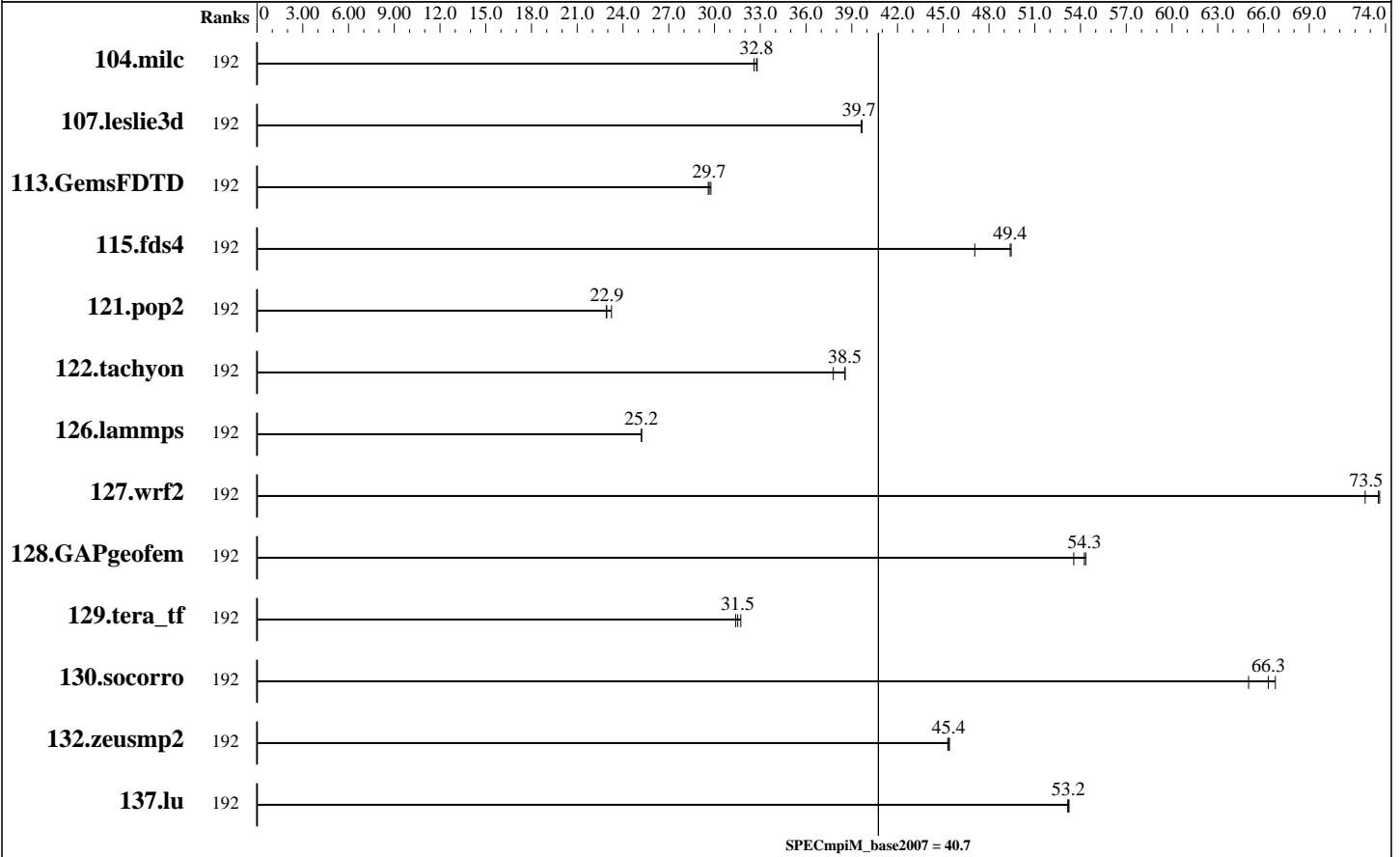
Test sponsor: SGI

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	192	48.0	32.6	47.7	32.8	<b>47.8</b>	<b>32.8</b>									
107.leslie3d	192	132	39.7	<b>132</b>	<b>39.7</b>	132	39.6									
113.GemsFDTD	192	<b>213</b>	<b>29.7</b>	213	29.6	212	29.8									
115.fds4	192	<b>39.5</b>	<b>49.4</b>	41.5	47.1	39.5	49.5									
121.pop2	192	178	23.2	180	22.9	<b>180</b>	<b>22.9</b>									
122.tachyon	192	<b>72.6</b>	<b>38.5</b>	74.0	37.8	72.5	38.6									
126.lammps	192	<b>116</b>	<b>25.2</b>	116	25.2	116	25.2									
127.wrf2	192	107	72.7	<b>106</b>	<b>73.5</b>	106	73.6									
128.GAPgeofem	192	<b>38.1</b>	<b>54.3</b>	38.6	53.6	38.0	54.3									
129.tera_tf	192	88.2	31.4	<b>87.8</b>	<b>31.5</b>	87.2	31.7									

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	192	<u>57.6</u>	<u>66.3</u>	58.7	65.0	57.2	66.8							
132.zeusmp2	192	68.3	45.4	<u>68.4</u>	<u>45.4</u>	68.5	45.3							
137.lu	192	69.1	53.2	69.0	53.2	<u>69.1</u>	<u>53.2</u>							

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

## 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 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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Test date: Aug-2013

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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