



# SPEC® MPIM2007 Result

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## SGI

SGI Rackable C2005-TY3  
(Intel Xeon X5687, 3.60 GHz)

SPECmpiM\_peak2007 = Not Run

SPECmpiM\_base2007 = 16.4

MPI2007 license: 4

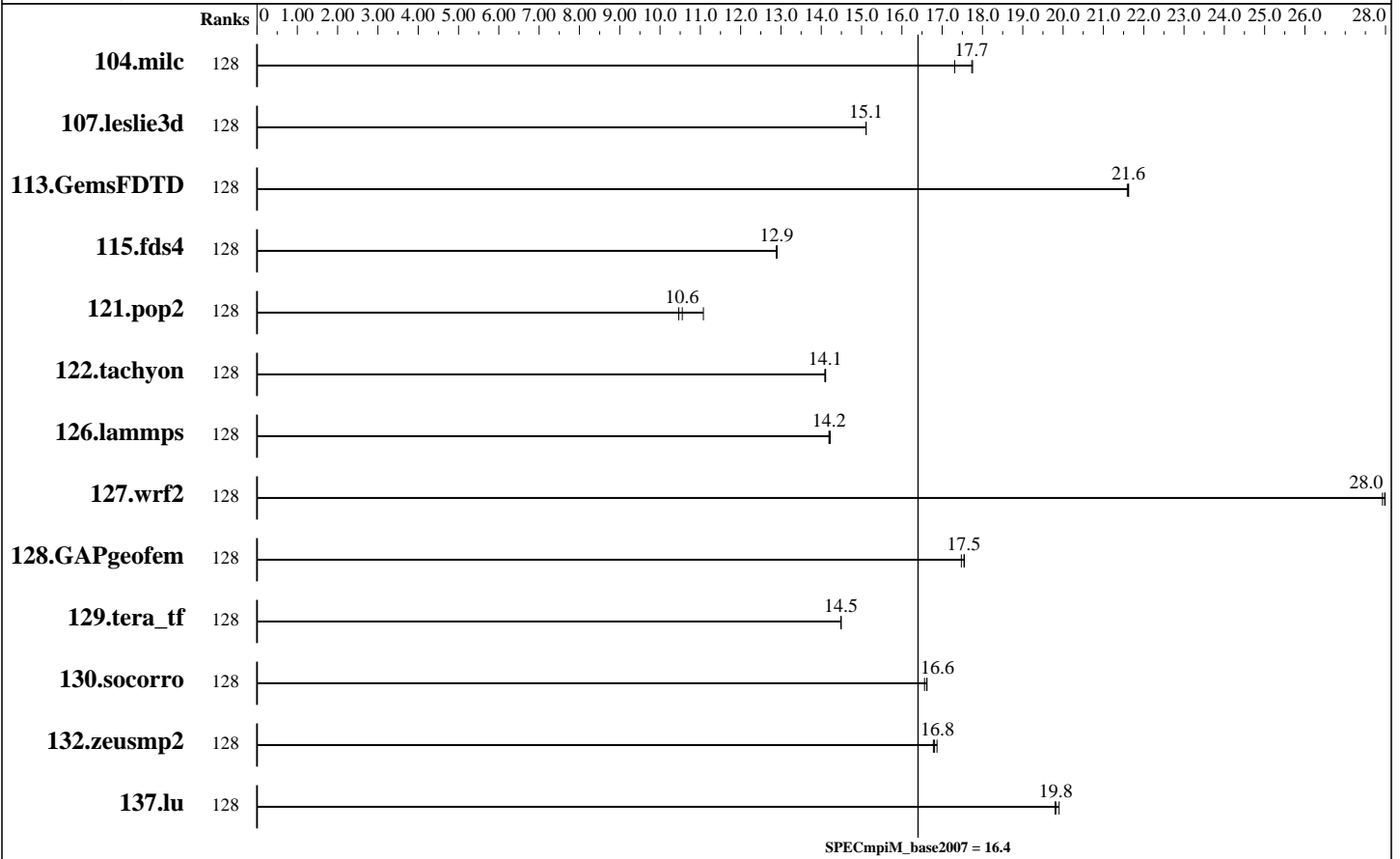
Test sponsor: SGI

Tested by: SGI

Test date: Aug-2011

Hardware Availability: Feb-2011

Software Availability: Jul-2011



## Results Table

| Benchmark     | Base  |            |             |            |             |             |             | Peak  |         |       |         |       |         |       |
|---------------|-------|------------|-------------|------------|-------------|-------------|-------------|-------|---------|-------|---------|-------|---------|-------|
|               | Ranks | Seconds    | Ratio       | Seconds    | Ratio       | Seconds     | Ratio       | Ranks | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 104.milc      | 128   | 90.4       | 17.3        | 88.1       | 17.8        | <b>88.3</b> | <b>17.7</b> |       |         |       |         |       |         |       |
| 107.leslie3d  | 128   | <b>345</b> | <b>15.1</b> | 345        | 15.1        | 345         | 15.1        |       |         |       |         |       |         |       |
| 113.GemsFDTD  | 128   | 292        | 21.6        | 292        | 21.6        | <b>292</b>  | <b>21.6</b> |       |         |       |         |       |         |       |
| 115.fds4      | 128   | 151        | 12.9        | 151        | 12.9        | <b>151</b>  | <b>12.9</b> |       |         |       |         |       |         |       |
| 121.pop2      | 128   | <b>391</b> | <b>10.6</b> | 395        | 10.5        | 373         | 11.1        |       |         |       |         |       |         |       |
| 122.tachyon   | 128   | 198        | 14.1        | <b>198</b> | <b>14.1</b> | 199         | 14.1        |       |         |       |         |       |         |       |
| 126.lammps    | 128   | <b>205</b> | <b>14.2</b> | 205        | 14.2        | 205         | 14.2        |       |         |       |         |       |         |       |
| 127.wrf2      | 128   | <b>279</b> | <b>28.0</b> | 279        | 27.9        | 279         | 28.0        |       |         |       |         |       |         |       |
| 128.GAPgeofem | 128   | 118        | 17.5        | 118        | 17.6        | <b>118</b>  | <b>17.5</b> |       |         |       |         |       |         |       |
| 129.tera_tf   | 128   | 191        | 14.5        | 191        | 14.5        | <b>191</b>  | <b>14.5</b> |       |         |       |         |       |         |       |

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 | 128   | 230     | 16.6  | <b><u>230</u></b> | <b><u>16.6</u></b> | 230               | 16.6               |       |         |       |         |       |         |       |  |  |
| 132.zeusmp2 | 128   | 185     | 16.8  | 184               | 16.9               | <b><u>185</u></b> | <b><u>16.8</u></b> |       |         |       |         |       |         |       |  |  |
| 137.lu      | 128   | 186     | 19.8  | 185               | 19.9               | <b><u>185</u></b> | <b><u>19.8</u></b> |       |         |       |         |       |         |       |  |  |

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 C2005-TY3 Compute Node  
 Interconnect: InfiniBand (MPI and I/O)  
 File Server Node: SGI InfiniteStorage 4500  
 Total Compute Nodes: 8  
 Total Chips: 16  
 Total Cores: 64  
 Total Threads: 128  
 Total Memory: 384 GB  
 Base Ranks Run: 128  
 Minimum Peak Ranks: --  
 Maximum Peak Ranks: --

#### Software Summary

C Compiler: Intel C++ Composer XE 2011 for Linux, Version 12.0.5.220 Build 20110719  
 C++ Compiler: Intel C++ Composer XE 2011 for Linux, Version 12.0.5.220 Build 20110719  
 Fortran Compiler: Intel Fortran Composer XE 2011 for Linux, Version 12.0.5.220 Build 20110719  
 Base Pointers: 64-bit  
 Peak Pointers: Not Applicable  
 MPI Library: SGI MPT 2.04 Patch 10773  
 Other MPI Info: OFED 1.4.2  
 Pre-processors: None  
 Other Software: None

### Node Description: SGI Rackable C2005-TY3 Compute Node

#### Hardware

Number of nodes: 8  
 Uses of the node: compute  
 Vendor: SGI  
 Model: SGI Rackable C2005-TY3 (Intel Xeon X5687, 3.60GHz)  
 CPU Name: Intel Xeon X5687  
 CPU(s) orderable: 1-2 chips  
 Chips enabled: 2  
 Cores enabled: 8  
 Cores per chip: 4  
 Threads per core: 2  
 CPU Characteristics: Quad Core, 3.60 GHz, 6.4 GT/s QPI  
 Intel Turbo Boost Technology up to 3.86 GHz  
 Hyper-Threading Technology enabled  
 CPU MHz: 3600  
 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: 48 GB (6 x 8 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: 1

#### Software

Adapter: Mellanox MT26428 ConnectX IB QDR (PCIe x8 Gen2 5 GT/s)  
 Adapter Driver: OFED-1.4.2  
 Adapter Firmware: 2.7.0  
 Operating System: SUSE Linux Enterprise Server 11 SP1 (x86\_64) Kernel 2.6.32.36-0.5-default  
 Local File System: NFSv3  
 Shared File System: NFSv3 IPoIB  
 System State: Multi-user, run level 3  
 Other Software: SGI Performance Suite 1.2, Build 704r5.sles11-1103212004

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Tested by: SGI

Test date: Aug-2011

Hardware Availability: Feb-2011

Software Availability: Jul-2011

### Node Description: SGI Rackable C2005-TY3 Compute Node

Slot Type: PCIe x8 Gen2  
Data Rate: InfiniBand 4x QDR  
Ports Used: 1  
Interconnect Type: InfiniBand

### Node Description: SGI InfiniteStorage 4500

#### Hardware

Number of nodes: 1  
Uses of the node: fileserver  
Vendor: SGI  
Model: SGI Altix 450 (Intel Itanium 2, 1.6 GHz)  
CPU Name: Intel Itanium 2 9030  
CPU(s) orderable: 2-38 chips  
Chips enabled: 4  
Cores enabled: 8  
Cores per chip: 2  
Threads per core: 1  
CPU Characteristics: 1.6GHz/8MB, 533MHz FSB  
CPU MHz: 1600  
Primary Cache: 16 KB I + 16 KB D on chip per core  
Secondary Cache: 1 MB I + 256 KB D on chip per core  
L3 Cache: 4 MB I+D on chip per core  
Other Cache: None  
Memory: 48 GB (24 x 2 GB, 2Rx4 PC2-3200-4, ECC)  
Disk Subsystem: 5.8 TB RAID 5  
20 x 146 GB FC (Seagate Cheetah 15K.4)  
40 x 73 GB FC (Seagate Cheetah 15K.4)  
Other Hardware: None  
Adapter: Mellanox MT25208 InfiniHost III Ex  
(PCIe x8 Gen1 2.5 GT/s)  
Number of Adapters: 2  
Slot Type: PCIe x8 Gen1  
Data Rate: InfiniBand 4x DDR  
Ports Used: 2  
Interconnect Type: InfiniBand

#### Software

Adapter: Mellanox MT25208 InfiniHost III Ex  
(PCIe x8 Gen1 2.5 GT/s)  
Adapter Driver: OFED-1.4.2  
Adapter Firmware: 4.8.200  
Operating System: SUSE Linux Enterprise Server 11 SP1 (ia64)  
Kernel 2.6.32.23-0.3-default  
Local File System: xfs  
Shared File System: --  
System State: Multi-user, run level 3  
Other Software: SGI InfiniteStorage Software Platform, version  
2.2, Build 702r16.sles11-1010082110

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

#### Hardware

Vendor: Mellanox Technologies  
Model: n/a  
Switch Model: Voltaire Grid Director 4200  
Number of Switches: 1  
Number of Ports: 36  
Data Rate: InfiniBand 4x QDR

#### Software

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Tested by: SGI

Test date: Aug-2011

Hardware Availability: Feb-2011

Software Availability: Jul-2011

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

Firmware: 3.0.0 BUILD ID 629  
Topology: Fat tree  
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
ulimit -s unlimited
```

BIOS settings:

```
AMI BIOS version 2.10
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:

```
126.lammps: icpc
```

Fortran benchmarks:

```
ifort
```

Benchmarks using both Fortran and C:

```
icc ifort
```



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## 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

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

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