



# SPEC® MPIM2007 Result

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## SGI

SGI Altix ICE 8200EX  
(Intel Xeon X5570, 2.93 GHz, DDR3-1333)

SPECmpiM\_peak2007 = Not Run

SPECmpiM\_base2007 = 41.1

MPI2007 license: 4

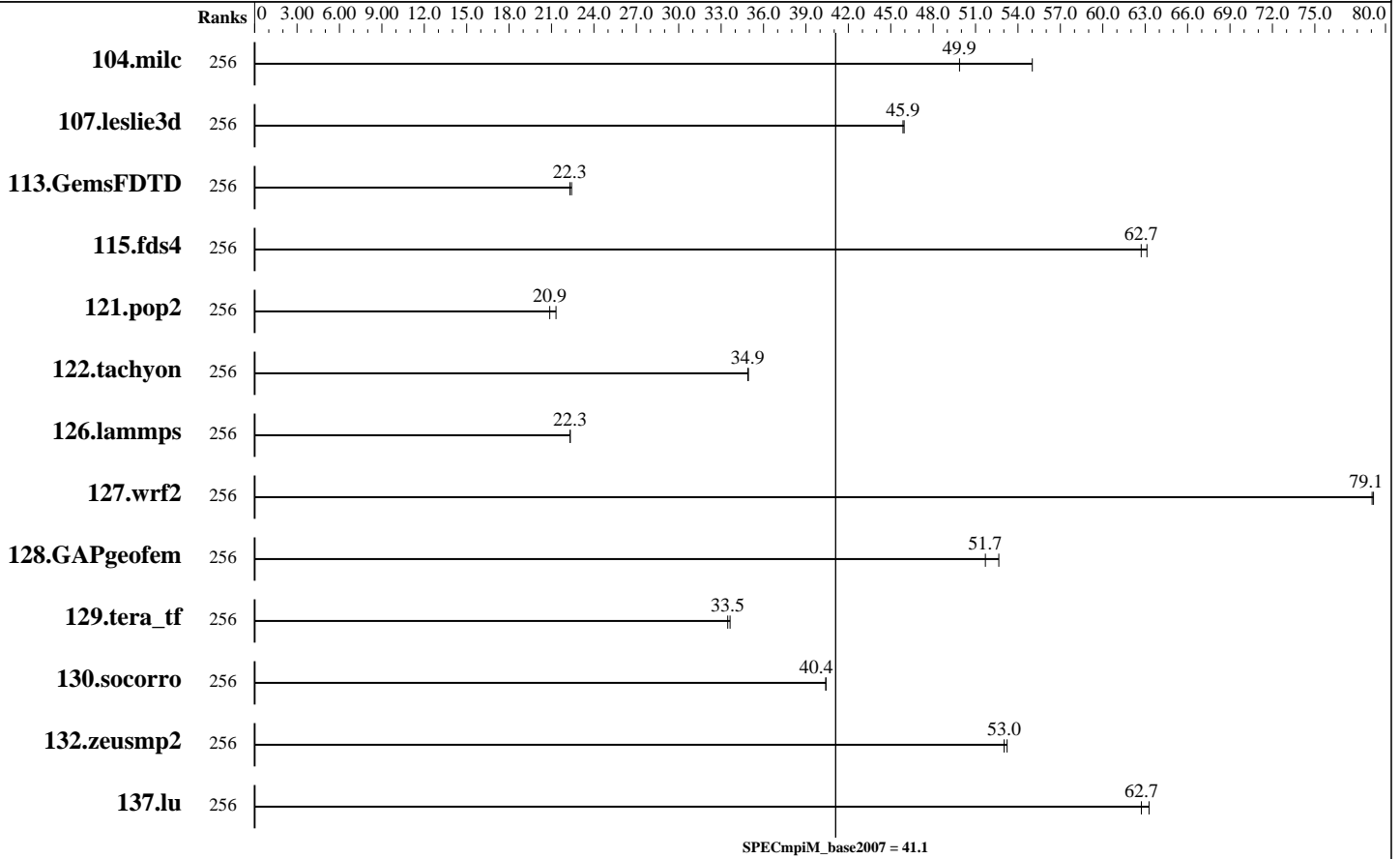
Test sponsor: SGI

Tested by: SGI

Test date: Sep-2009

Hardware Availability: Mar-2009

Software Availability: Aug-2009



## Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	256	<u>31.4</u>	<u>49.9</u>	28.4	55.0									
107.leslie3d	256	<u>114</u>	<u>45.9</u>	114	45.9									
113.GemsFDTD	256	<u>283</u>	<u>22.3</u>	281	22.4									
115.fds4	256	<u>31.1</u>	<u>62.7</u>	30.9	63.1									
121.pop2	256	194	21.3	<u>198</u>	<u>20.9</u>									
122.tachyon	256	<u>80.2</u>	<u>34.9</u>	80.1	34.9									
126.lammps	256	<u>131</u>	<u>22.3</u>	131	22.3									
127.wrf2	256	98.5	79.2	<u>98.6</u>	<u>79.1</u>									
128.GAPgeofem	256	39.2	52.6	<u>39.9</u>	<u>51.7</u>									
129.tera_tf	256	<u>82.7</u>	<u>33.5</u>	82.3	33.6									

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	256	94.4	40.4	<b><u>94.5</u></b>	<b><u>40.4</u></b>											
132.zeusmp2	256	58.3	53.2	<b><u>58.5</u></b>	<b><u>53.0</u></b>											
137.lu	256	58.1	63.3	<b><u>58.6</u></b>	<b><u>62.7</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 Altix ICE 8200EX Compute Node  
 Interconnects: InfiniBand (MPI)  
 InfiniBand (I/O)  
 File Server Node: SGI InfiniteStorage Nexis 2000 NAS  
 Total Compute Nodes: 32  
 Total Chips: 64  
 Total Cores: 256  
 Total Threads: 512  
 Total Memory: 768 GB  
 Base Ranks Run: 256  
 Minimum Peak Ranks: --  
 Maximum Peak Ranks: --

### Software Summary

C Compiler: Intel C Compiler for Linux  
 Version 11.1, Build 20090630  
 C++ Compiler: Intel C++ Compiler for Linux  
 Version 11.1, Build 20090630  
 Fortran Compiler: Intel Fortran Compiler for Linux  
 Version 11.1, Build 20090630  
 Base Pointers: 64-bit  
 Peak Pointers: 64-bit  
 MPI Library: SGI MPT 1.24  
 Other MPI Info: OFED 1.4  
 Pre-processors: None  
 Other Software: None

## Node Description: SGI Altix ICE 8200EX Compute Node

### Hardware

Number of nodes: 32  
 Uses of the node: compute  
 Vendor: SGI  
 Model: SGI Altix ICE 8200EX (Intel Xeon X5570, 2.93 GHz, DDR3-1333)  
 CPU Name: Intel Xeon X5570  
 CPU(s) orderable: 1-2 chips  
 Chips enabled: 2  
 Cores enabled: 8  
 Cores per chip: 4  
 Threads per core: 2  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.33 GHz, 6.4 GT/s QPI, Hyper-Threading enabled  
 CPU MHz: 2934  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core  
 L3 Cache: 8 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 24 GB (6\*4GB DDR3-1333 CL9 RDIMMs)  
 Disk Subsystem: None  
 Other Hardware: None  
 Adapter: Mellanox MT26418 ConnectX IB DDR (PCIe x8 Gen2 5 GT/s)  
 Number of Adapters: 1

### Software

Adapter: Mellanox MT26418 ConnectX IB DDR (PCIe x8 Gen2 5 GT/s)  
 Adapter Driver: OFED-1.4  
 Adapter Firmware: 2.6.0  
 Operating System: SUSE Linux Enterprise Server 10 (x86\_64) SP2  
 Kernel 2.6.16.60-0.34-smp  
 Local File System: NFSv3  
 Shared File System: NFSv3 IPoIB  
 System State: Multi-user, run level 3  
 Other Software: SGI ProPack 6 for Linux Service Pack 3, SGI Tempo V 1.7

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Software Availability: Aug-2009

### Node Description: SGI Altix ICE 8200EX Compute Node

Slot Type: PCIe x8 Gen2  
Data Rate: InfiniBand 4x DDR  
Ports Used: 2  
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 240 (Intel Xeon 5140, 2.33 GHz)  
CPU Name: Intel Xeon 5140  
CPU(s) orderable: 1-2 chips  
Chips enabled: 2  
Cores enabled: 4  
Cores per chip: 2  
Threads per core: 1  
CPU Characteristics: 1333 MHz FSB  
CPU MHz: 2328  
Primary Cache: 32 KB I + 32 KB D on chip per core  
Secondary Cache: 4 MB I+D on chip per chip  
L3 Cache: None  
Other Cache: None  
Memory: 24 GB (6\*4GB DDR2-400 DIMMS)  
Disk Subsystem: 7 TB RAID 5  
48 x 147 GB SAS (Seagate Cheetah 15000 rpm)  
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-1.3  
Adapter Firmware: 5.3.0  
Operating System: SUSE Linux Enterprise Server 10 (x86\_64) SP1  
Kernel 2.6.16.54-0.2.5-smp  
Local File System: xfs  
Shared File System: --  
System State: Multi-user, run level 3  
Other Software: SGI ProPack 5 for Linux Service Pack 5

### Interconnect Description: InfiniBand (MPI)

#### Hardware

Vendor: Mellanox Technologies  
Model: MT26418 ConnectX  
Switch Model: Mellanox MT47396 InfiniScale III  
Number of Switches: 16  
Number of Ports: 24  
Data Rate: InfiniBand 4x DDR  
Firmware: 2020001

#### Software

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Tested by: SGI

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Software Availability: Aug-2009

### Interconnect Description: InfiniBand (MPI)

Topology: Bristle hypercube with express links  
Primary Use: MPI traffic

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

	Hardware	Software
Vendor:	Mellanox Technologies	
Model:	MT26418 ConnectX	
Switch Model:	Mellanox MT47396 InfiniScale-III	
Number of Switches:	8	
Number of Ports:	24	
Data Rate:	InfiniBand 4x DDR	
Firmware:	2020001	
Topology:	Bristle hypercube with express links	
Primary Use:	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_DSM_DISTRIBUTE=yes
export MPI_IB_RAILS=2
ulimit -s unlimited
```

#### BIOS settings:

```
AMI BIOS version 8.15
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
```

#### 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 16/32/64 ranks, 4 switches for 128 ranks, 8 switches for 256 ranks and 16 switches for 512 ranks.



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## Base Compiler Invocation

C benchmarks:  
icc

C++ benchmarks:  
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 -ipo -xT -no-prec-div

C++ benchmarks:  
126.lammps: -O3 -ipo -xT -no-prec-div -ansi-alias

Fortran benchmarks:  
-O3 -ipo -xT -no-prec-div

Benchmarks using both Fortran and C:  
-O3 -ipo -xT -no-prec-div

## Base Other Flags

C benchmarks:  
-lmpi

C++ benchmarks:  
126.lammps: -lmpi

Fortran benchmarks:  
-lmpi

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## Base Other Flags (Continued)

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\\_Intel111\\_flags.html](http://www.spec.org/mpi2007/flags/SGI_x86_64_Intel111_flags.html)

You can also download the XML flags source by saving the following link:

[http://www.spec.org/mpi2007/flags/SGI\\_x86\\_64\\_Intel111\\_flags.xml](http://www.spec.org/mpi2007/flags/SGI_x86_64_Intel111_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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