



# SPEC® MPIM2007 Result

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## SGI

SGI Altix ICE 8400EX  
(AMD Opteron 6180 SE, 2.5GHz)

SPECmpiM\_peak2007 = Not Run

SPECmpiM\_base2007 = 30.1

MPI2007 license: 4

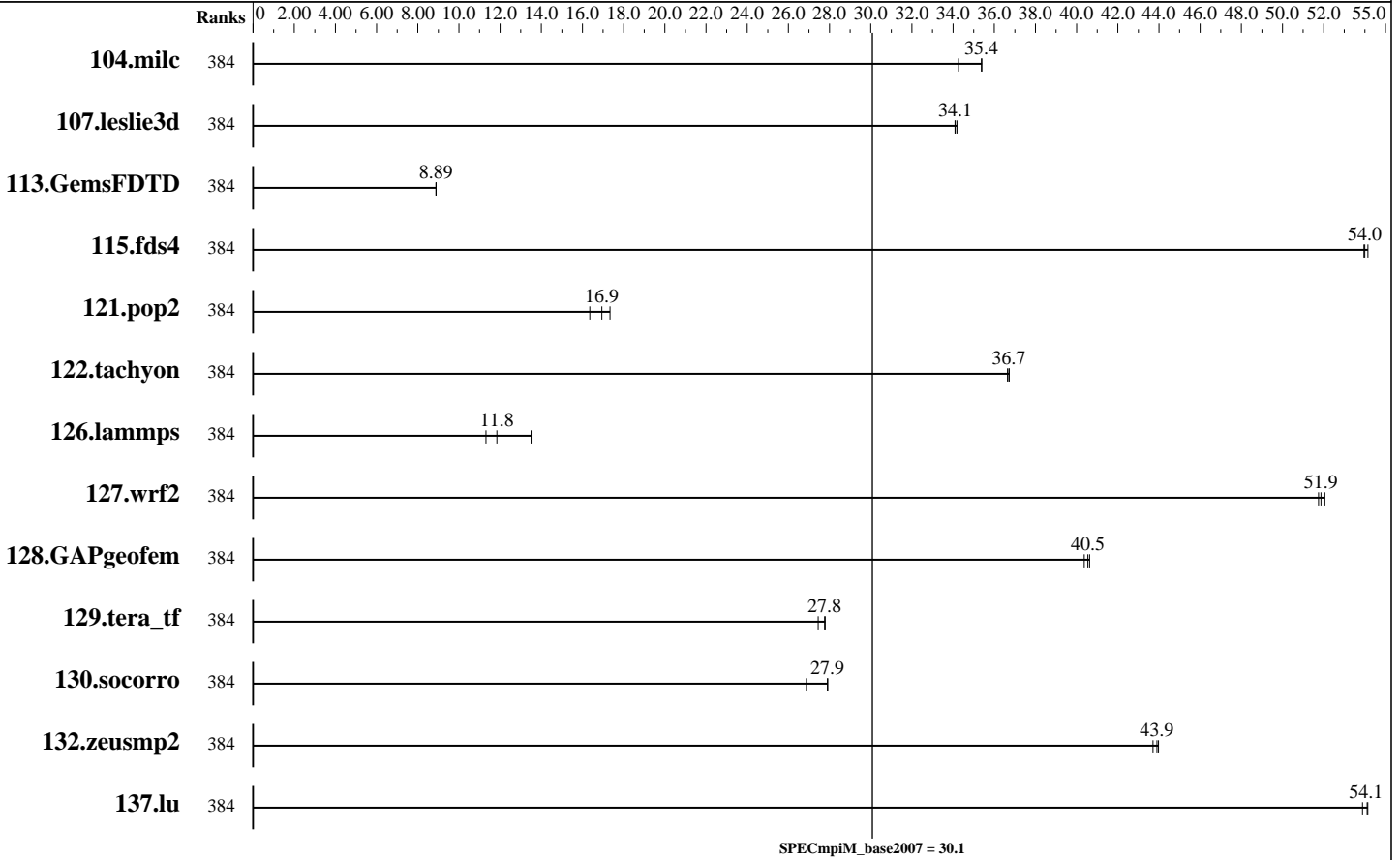
Test sponsor: SGI

Tested by: SGI

Test date: Jun-2011

Hardware Availability: Mar-2011

Software Availability: Aug-2011



## Results Table

Benchmark	Base								Peak					
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	384	45.7	34.3	<b><u>44.2</u></b>	<b><u>35.4</u></b>	44.2	35.4							
107.leslie3d	384	<b><u>153</u></b>	<b><u>34.1</u></b>	153	34.1	153	34.2							
113.GemsFDTD	384	710	8.89	710	8.89	<b><u>710</u></b>	<b><u>8.89</u></b>							
115.fds4	384	<b><u>36.1</u></b>	<b><u>54.0</u></b>	36.0	54.1	36.2	54.0							
121.pop2	384	238	17.3	252	16.4	<b><u>244</u></b>	<b><u>16.9</u></b>							
122.tachyon	384	<b><u>76.2</u></b>	<b><u>36.7</u></b>	76.2	36.7	76.3	36.6							
126.lammps	384	216	13.5	<b><u>246</u></b>	<b><u>11.8</u></b>	258	11.3							
127.wrf2	384	<b><u>150</u></b>	<b><u>51.9</u></b>	151	51.8	150	52.1							
128.GAPgeofem	384	<b><u>50.9</u></b>	<b><u>40.5</u></b>	51.2	40.4	50.8	40.6							
129.tera_tf	384	<b><u>99.7</u></b>	<b><u>27.8</u></b>	101	27.4	99.6	27.8							

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	384	<u>137</u>	<u>27.9</u>	137	27.9	142	26.9									
132.zeusmp2	384	70.6	44.0	<u>70.7</u>	<u>43.9</u>	71.0	43.7									
137.lu	384	67.9	54.1	<u>67.9</u>	<u>54.1</u>	68.2	53.9									

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 8400EX Compute Node  
 Interconnect: InfiniBand (MPI and I/O)  
 File Server Node: SGI InfiniteStorage 4000  
 Total Compute Nodes: 16  
 Total Chips: 32  
 Total Cores: 384  
 Total Threads: 384  
 Total Memory: 1 TB  
 Base Ranks Run: 384  
 Minimum Peak Ranks: --  
 Maximum Peak Ranks: --

#### Software Summary

C Compiler: Intel C Compiler for Linux  
 Version 11.1, Build 20100806  
 C++ Compiler: Intel C++ Compiler for Linux  
 Version 11.1, Build 20100806  
 Fortran Compiler: Intel Fortran Compiler for Linux  
 Version 11.1, Build 20100806  
 Base Pointers: 64-bit  
 Peak Pointers: 64-bit  
 MPI Library: SGI MPT 2.04 Patch 10789  
 Other MPI Info: OFED 1.4.2  
 Pre-processors: None  
 Other Software: None

### Node Description: SGI Altix ICE 8400EX Compute Node

#### Hardware

Number of nodes: 16  
 Uses of the node: compute  
 Vendor: SGI  
 Model: SGI Altix ICE 8400EX (AMD Opteron 6180 SE, 2.5GHz)  
 CPU Name: AMD Opteron 6180 SE  
 CPU(s) orderable: 1-2 chips  
 Chips enabled: 2  
 Cores enabled: 24  
 Cores per chip: 12  
 Threads per core: 1  
 CPU Characteristics: 12 Cores/chip, 2.5 GHz  
 CPU MHz: 2500  
 Primary Cache: 64 KB I + 64 KB D on chip per core  
 Secondary Cache: 512 KB I+D on chip per core  
 L3 Cache: 12 MB I+D on chip per chip, 6 MB shared / 6 cores  
 Other Cache: None  
 Memory: 64 GB (16 x 4 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  
 Slot Type: PCIe x8 Gen2  
 Data Rate: InfiniBand 4x QDR

#### 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 2.6.32.27-0.2-default  
 Local File System: NFSv3  
 Shared File System: NFSv3 IPoIB  
 System State: Run Level 3 (Multi-User)  
 Other Software: SGI Performance Suite 1.0,  
 Build 702r19.sles11-1010072114  
 SGI Tempo Compute Node 2.2,  
 Build 702r19.sles11-1010072114

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Tested by: SGI

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Hardware Availability: Mar-2011

Software Availability: Aug-2011

### Node Description: SGI Altix ICE 8400EX Compute Node

Ports Used: 2  
Interconnect Type: InfiniBand

### Node Description: SGI InfiniteStorage 4000

#### Hardware

Number of nodes: 1  
Uses of the node: fileserver  
Vendor: SGI  
Model: SGI Altix 450 (Intel Itanium 2, 1.6GHz)  
CPU Name: Intel Itanium 2 9030  
CPU(s) orderable: 2-38 chips  
Chips enabled: 2  
Cores enabled: 4  
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: 24 GB (12 x 2 GB, 2Rx4 PC2-3200-3, ECC)  
Disk Subsystem: 16 TB RAID 5  
32 x 500 GB SATA (Seagate Barracuda 7.2K)  
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: 5.3.0  
Operating System: SUSE Linux Enterprise Server 11 SP1 (ia64)  
Kernel 2.6.32.12-0.7-default  
Local File System: xfs  
Shared File System: --  
System State: Run Level 3 (Multi-User)  
Other Software: SGI ProPack 7SP1 for Linux,  
Build 701r2.sles11-1005242307

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

#### Hardware

Vendor: Mellanox Technologies and SGI  
Model: None  
Switch Model: SGI QDR\_1.5\_HYPR\_2454 with Mellanox Device 48438  
(Infiniscale IV)  
Number of Switches: 2  
Number of Ports: 36  
Data Rate: InfiniBand 4x QDR  
Firmware: 5040005  
Topology: Enhanced Hypercube

#### Software

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

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 1.0a

Job Placement:

Each MPI job is assigned to a topologically compact set of nodes, i.e. the minimal needed number of switches was used for each job: 1 switch for up to 192 ranks, 2 switches for 384 ranks, 4 switches for 768 ranks, 8 switches for 1536 ranks and 16 switches for 3072 ranks.

## 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



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## Base Optimization Flags

C benchmarks:

-O3 -xSSE2 -ipo -no-prec-div

C++ benchmarks:

126.lammps: -O3 -xSSE2 -ipo -no-prec-div -ansi-alias

Fortran benchmarks:

-O3 -xSSE2 -ipo -no-prec-div

Benchmarks using both Fortran and C:

-O3 -xSSE2 -ipo -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\\_Intel111\\_flags.20120720.00.html](http://www.spec.org/mpi2007/flags/SGI_x86_64_Intel111_flags.20120720.00.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.20120720.00.xml](http://www.spec.org/mpi2007/flags/SGI_x86_64_Intel111_flags.20120720.00.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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