



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 = 59.8

MPI2007 license: 4

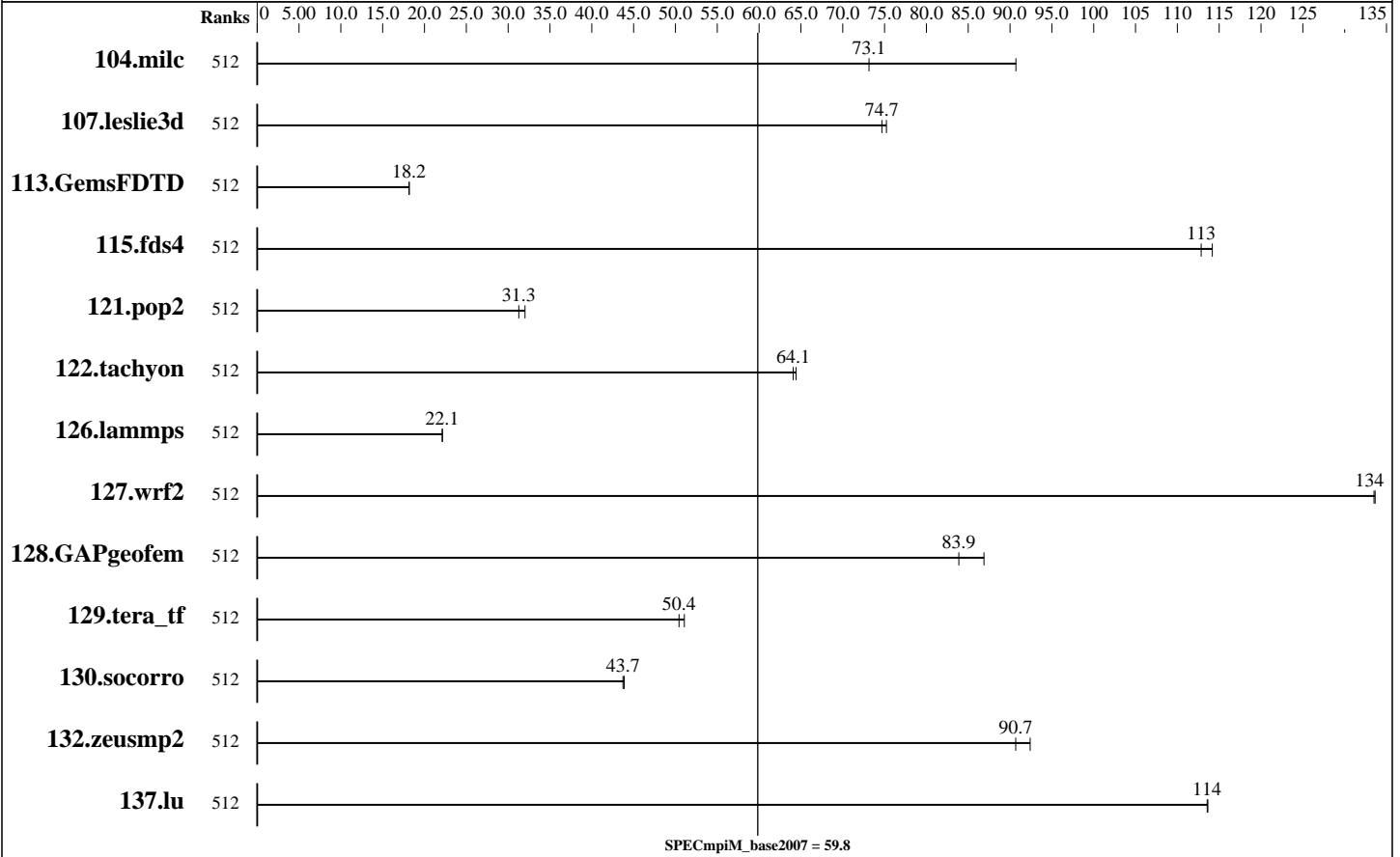
Test sponsor: SGI

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	512	<u>21.4</u>	<u>73.1</u>	17.3	90.7											
107.leslie3d	512	69.4	75.2	<u>69.9</u>	<u>74.7</u>											
113.GemsFDTD	512	347	18.2	<u>347</u>	<u>18.2</u>											
115.fds4	512	17.1	114	<u>17.3</u>	<u>113</u>											
121.pop2	512	<u>132</u>	<u>31.3</u>	129	32.0											
122.tachyon	512	43.4	64.4	<u>43.7</u>	<u>64.1</u>											
126.lammps	512	<u>132</u>	<u>22.1</u>	132	22.2											
127.wrf2	512	58.3	134	<u>58.4</u>	<u>134</u>											
128.GAPgeofem	512	<u>24.6</u>	<u>83.9</u>	23.8	86.9											
129.tera_tf	512	<u>54.9</u>	<u>50.4</u>	54.2	51.1											

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	512	87.0	43.9	<u>87.3</u>	<u>43.7</u>											
132.zeusmp2	512	33.6	92.4	<u>34.2</u>	<u>90.7</u>											
137.lu	512	<u>32.4</u>	<u>114</u>	32.3	114											

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: 64
 Total Chips: 128
 Total Cores: 512
 Total Threads: 1024
 Total Memory: 1536 GB
 Base Ranks Run: 512
 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: 64
 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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Software Availability: Aug-2009

Interconnect Description: InfiniBand (MPI)

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

Interconnect Description: InfiniBand (I/O)

Hardware

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

Software

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

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

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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