



SPEC® MPIM2007 Result

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SGI

SGI Altix ICE 8400EX
(Intel Xeon X5690, 3.46 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 53.2

MPI2007 license: 4

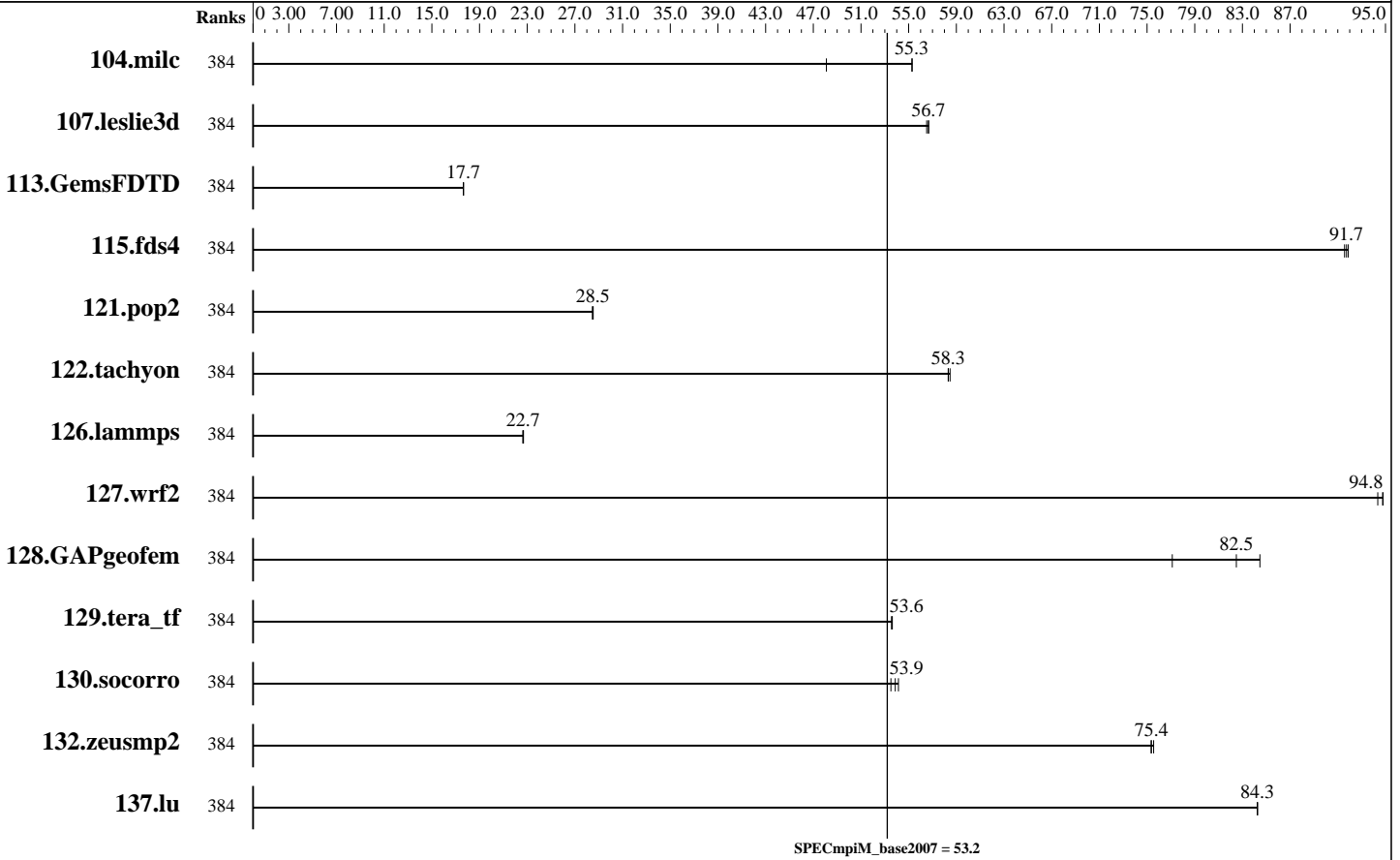
Test sponsor: SGI

Tested by: SGI

Test date: Jun-2011

Hardware Availability: Feb-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	32.5	48.1	<u>28.3</u>	<u>55.3</u>	28.3	55.3							
107.leslie3d	384	<u>92.1</u>	<u>56.7</u>	92.4	56.5	92.1	56.7							
113.GemsFDTD	384	358	17.6	357	17.7	<u>357</u>	<u>17.7</u>							
115.fds4	384	<u>21.3</u>	<u>91.7</u>	21.3	91.6	21.2	91.9							
121.pop2	384	145	28.5	<u>145</u>	<u>28.5</u>	145	28.5							
122.tachyon	384	48.0	58.3	<u>48.0</u>	<u>58.3</u>	47.8	58.5							
126.lammps	384	129	22.6	<u>129</u>	<u>22.7</u>	128	22.7							
127.wrf2	384	<u>82.3</u>	<u>94.8</u>	82.6	94.4	82.2	94.8							
128.GAPgeofem	384	<u>25.0</u>	<u>82.5</u>	24.4	84.5	26.8	77.1							
129.tera_tf	384	<u>51.7</u>	<u>53.6</u>	51.7	53.6	51.6	53.6							

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	384	71.3	53.5	70.5	54.1	70.9	53.9							
132.zeusmp2	384	41.1	75.6	41.2	75.4	41.2	75.3							
137.lu	384	43.6	84.3	43.6	84.3	43.6	84.2							

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 Nexis 2000 NAS
 Total Compute Nodes: 32
 Total Chips: 64
 Total Cores: 384
 Total Threads: 768
 Total Memory: 768 GB
 Base Ranks Run: 384
 Minimum Peak Ranks: --
 Maximum Peak Ranks: --

Software Summary

C Compiler: Intel C++ Composer XE 2011 for Linux, Version 12.0.3.174 Build 20110309
 C++ Compiler: Intel C++ Composer XE 2011 for Linux, Version 12.0.3.174 Build 20110309
 Fortran Compiler: Intel Fortran Composer XE 2011 for Linux, Version 12.0.3.174 Build 20110309
 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: 32
 Uses of the node: compute
 Vendor: SGI
 Model: SGI Altix ICE 8400EX (Intel Xeon X5690, 3.46 GHz)
 CPU Name: Intel Xeon X5690
 CPU(s) orderable: 1-2 chips
 Chips enabled: 2
 Cores enabled: 12
 Cores per chip: 6
 Threads per core: 2
 CPU Characteristics: Six Core, 3.46 GHz, 6.4 GT/s QPI
 Intel Turbo Boost Technology up to 3.73 GHz
 Hyper-Threading Technology enabled
 CPU MHz: 3467
 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: 24 GB (6 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: 2
 Slot Type: PCIe x8 Gen2

Software

Adapter: Mellanox MT26428 ConnectX IB QDR (PCIe x8 Gen2 5 GT/s)
 Adapter Driver: OFED-1.4.2
 Adapter Firmware: 2.7.8200
 Operating System: SUSE Linux Enterprise Server 11 SP1, Kernel 2.6.32.13-0.4-default
 Local File System: NFSv3
 Shared File System: NFSv3 IPoIB
 System State: Multi-user, run level 3
 Other Software: SGI ProPack 7SP1 for Linux, Build 701r3.sles11-1005252113
 SGI Tempo Compute Node 2.1, Build 701r3.sles11-1005252113

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Node Description: SGI Altix ICE 8400EX Compute Node

Data Rate: InfiniBand 4x QDR
Ports Used: 1
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 270 (Intel Xeon X5670, 2.93 GHz)
CPU Name: Intel Xeon X5670
CPU(s) orderable: 1-2 chips
Chips enabled: 2
Cores enabled: 12
Cores per chip: 6
Threads per core: 2
CPU Characteristics: Intel Turbo Boost Technology up to 3.33 GHz
Hyper-Threading Technology enabled
CPU MHz: 2933
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per chip
L3 Cache: 12 MB I+D on chip per chip
Other Cache: None
Memory: 96 GB (12*8 GB DDR3-1333 CL9 DIMMs)
Disk Subsystem: 8.8 TB RAID 5
60 x 146 GB SAS (Seagate Cheetah 15K.5)
Other Hardware: None
Adapter: Mellanox MT26428 ConnectX IB QDR
(PCIe x8 Gen2 5 GT/s)
Number of Adapters: 2
Slot Type: PCIe x8 Gen2
Data Rate: InfiniBand 4x QDR
Ports Used: 2
Interconnect Type: InfiniBand

Software

Adapter: Mellanox MT26428 ConnectX IB QDR
(PCIe x8 Gen2 5 GT/s)
Adapter Driver: OFED-1.4.0
Adapter Firmware: 2.7.0
Operating System: SUSE Linux Enterprise Server 11 (x86_64)
Kernel 2.6.27.19-5-default
Local File System: xfs
Shared File System: --
System State: Multi-user, run level 3
Other Software: SGI Foundation Software 2, Build
700r3.sles11-1004061553

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: 8
Number of Ports: 36
Data Rate: InfiniBand 4x QDR

Software

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Interconnect Description: InfiniBand (MPI and I/O)

Firmware: 5040005
Topology: Enhanced Hypercube
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
export MPI_IB_RAILS=2
ulimit -s unlimited
```

BIOS settings:

```
AMI BIOS version 080016
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 up to 96 ranks, 4 switches for 192 ranks, 8 switches for 384 ranks, 16 switches for 768 ranks.

Additional notes regarding interconnect:

The Infiniband network consists of two independent planes, with half the switches in the system allocated to each plane. I/O traffic is restricted to one plane, while MPI traffic can use both planes.

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

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



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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_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

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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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