



SPEC[®] MPIL2007 Result

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SGI

SGI Altix ICE 8200EX
(Intel Xeon X5560, 2.80 GHz)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 27.9

MPI2007 license: 4

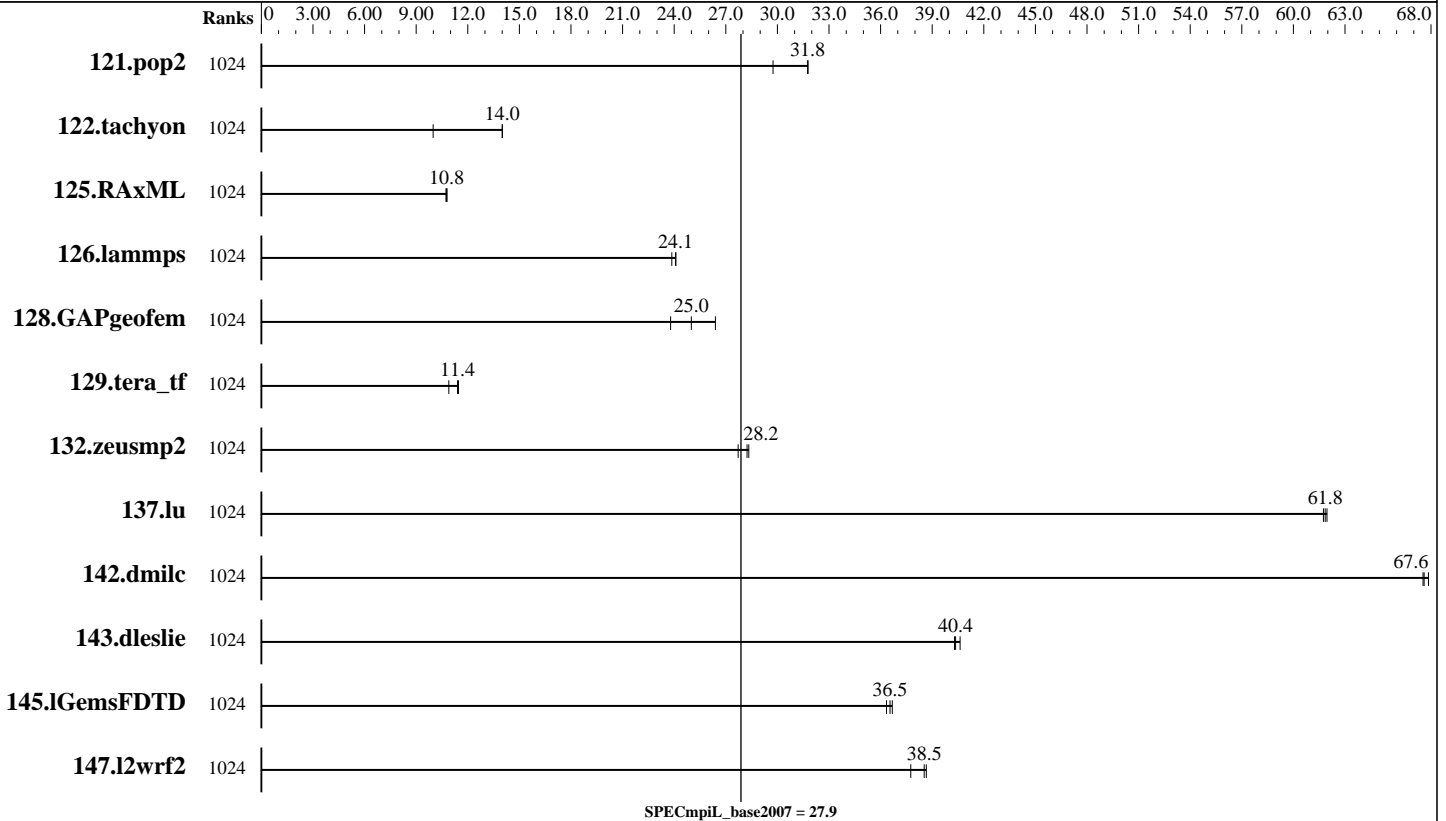
Test sponsor: SGI

Tested by: SGI

Test date: Jan-2010

Hardware Availability: Sep-2009

Software Availability: Dec-2009



Results Table

Benchmark	Base								Peak							
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
121.pop2	1024	131	29.7	122	31.8	<u>123</u>	<u>31.8</u>									
122.tachyon	1024	195	9.99	<u>139</u>	<u>14.0</u>	139	14.0									
125.RAxML	1024	272	10.7	271	10.8	<u>271</u>	<u>10.8</u>									
126.lammps	1024	103	23.9	<u>102</u>	<u>24.1</u>	102	24.1									
128.GAPgeofem	1024	225	26.4	<u>237</u>	<u>25.0</u>	249	23.8									
129.tera_tf	1024	101	10.9	95.9	11.5	<u>96.4</u>	<u>11.4</u>									
132.zeusmp2	1024	<u>75.1</u>	<u>28.2</u>	74.8	28.3	76.5	27.7									
137.lu	1024	68.1	61.7	<u>67.9</u>	<u>61.8</u>	67.8	62.0									
142.dmilc	1024	54.5	67.5	<u>54.5</u>	<u>67.6</u>	54.3	67.9									
143.dleslie	1024	<u>76.8</u>	<u>40.4</u>	76.9	40.3	76.3	40.6									
145.lGemsFDTD	1024	<u>121</u>	<u>36.5</u>	121	36.3	120	36.7									
147.l2wrf2	1024	<u>213</u>	<u>38.5</u>	217	37.8	212	38.7									

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Standard Performance Evaluation Corporation

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http://www.spec.org/



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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: 128
 Total Chips: 256
 Total Cores: 1024
 Total Threads: 2048
 Total Memory: 4608 GB
 Base Ranks Run: 1024
 Minimum Peak Ranks: --
 Maximum Peak Ranks: --

Software Summary

C Compiler: Intel C Compiler for Linux
 Version 11.1, Build 20091130
 C++ Compiler: Intel C++ Compiler for Linux
 Version 11.1, Build 20091130
 Fortran Compiler: Intel Fortran Compiler for Linux
 Version 11.1, Build 20091130
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 MPI Library: SGI MPT 1.25
 Other MPI Info: OFED-1.4.1
 Pre-processors: None
 Other Software: None

Node Description: SGI Altix ICE 8200EX Compute Node

Hardware

Number of nodes: 128
 Uses of the node: compute
 Vendor: SGI
 Model: SGI Altix ICE 8200EX (Intel Xeon X5560, 2.80 GHz)
 CPU Name: Intel Xeon X5560
 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 3.2 GHz,
 6.4 GT/s QPI, Hyper-Threading enabled
 CPU MHz: 2800
 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: 36 GB (6*4GB + 6*2GB DDR3-1333 CL9 RDIMMs running
 at 1066 MHz. The 4GB DIMM is installed in DIMM
 slot A in each channel.)
 Disk Subsystem: None
 Other Hardware: None
 Adapter: Mellanox MT26418 ConnectX IB DDR
 (PCIe x8 Gen2 5 GT/s)
 Number of Adapters: 1
 Slot Type: PCIe x8 Gen2
 Data Rate: InfiniBand 4x DDR
 Ports Used: 2
 Interconnect Type: InfiniBand

Software

Adapter: Mellanox MT26418 ConnectX IB DDR
 (PCIe x8 Gen2 5 GT/s)
 Adapter Driver: OFED-1.4.1
 Adapter Firmware: 2.6.0
 Operating System: SUSE Linux Enterprise Server 10 (x86_64) SP2
 Kernel 2.6.16.60-0.30-smp
 Local File System: None
 Shared File System: NFSv3 IPoIB
 System State: Multi-user, run level 3
 Other Software: SGI ProPack 6 for Linux Service Pack 5, SGI Tempo
 V 1.9



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Hardware Availability: Sep-2009

Software Availability: Dec-2009

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: 2333
 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: 16 GB (8*2GB DDR2-667MHz DIMMS)
 Disk Subsystem: 4.3 TB RAID 5
 48 x 146 GB SAS (Seagate Cheetah 15K.5)
 Other Hardware: None
 Adapter: Mellanox MT26418 ConnectX IB DDR
 (PCIe x8 Gen2 5 GT/s)
 Number of Adapters: 2
 Slot Type: PCIe x8 Gen2
 Data Rate: InfiniBand 4x DDR
 Ports Used: 2
 Interconnect Type: InfiniBand

Software

Adapter: Mellanox MT26418 ConnectX IB DDR
 (PCIe x8 Gen2 5 GT/s)
 Adapter Driver: OFED-1.4.1
 Adapter Firmware: 2.3.0
 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 MT48436 InfiniScale-IV
 Number of Switches: 128
 Number of Ports: 36
 Data Rate: InfiniBand 4x QDR
 Firmware: 4020001
 Topology: Bristle hypercube with double dimensional links
 Primary Use: MPI traffic

Software



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Software Availability: Dec-2009

Interconnect Description: InfiniBand (I/O)

Hardware

Software

Vendor: Mellanox Technologies
 Model: MT26418 ConnectX
 Switch Model: Mellanox MT48436 InfiniScale-IV
 Number of Switches: 64
 Number of Ports: 36
 Data Rate: InfiniBand 4x QDR
 Firmware: 4020001
 Topology: Bristle hypercube with double dimensional 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
```

Interconnect Data Rate:

The system interconnect has DDR InfiniBand HCAs, while the switches and cables run up to QDR rate.

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, 16 switches for 512 ranks, 32 switches for 1024 ranks, 64 switches for 2048 ranks and 128 switches for 4096 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

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

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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/results/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/results/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.

Tested with SPEC MPI2007 v85.

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