



SPEC[®] MPIL2007 Result

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SGI

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

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 8.18

MPI2007 license: 4

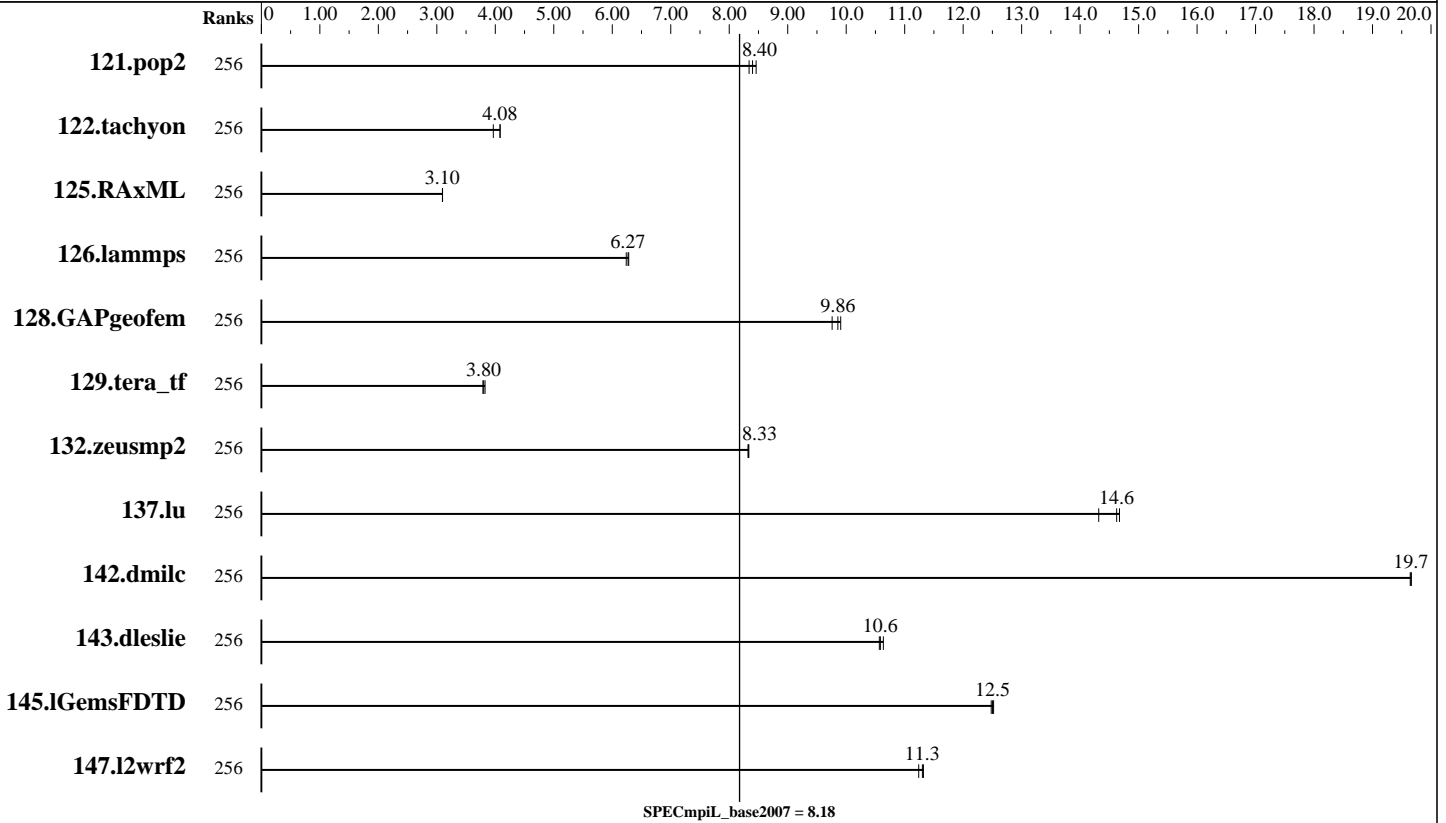
Test sponsor: SGI

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	256	467	8.34	463	8.40	460	8.46							
122.tachyon	256	490	3.97	476	4.08	476	4.08							
125.RAxML	256	943	3.10	942	3.10	943	3.10							
126.lammps	256	391	6.28	392	6.27	394	6.24							
128.GAPgeofem	256	599	9.91	608	9.76	602	9.86							
129.tera_tf	256	287	3.82	289	3.80	290	3.79							
132.zeusmp2	256	254	8.33	255	8.32	254	8.33							
137.lu	256	286	14.7	287	14.6	293	14.3							
142.dmilc	256	187	19.7	187	19.7	188	19.6							
143.dleslie	256	293	10.6	291	10.6	293	10.6							
145.lGemsFDTD	256	353	12.5	352	12.5	353	12.5							
147.l2wrf2	256	730	11.2	725	11.3	726	11.3							

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: 32
 Total Chips: 64
 Total Cores: 256
 Total Threads: 512
 Total Memory: 1152 GB
 Base Ranks Run: 256
 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: 32
 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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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

Continued on next page



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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.20100202.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.20100202.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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