SPEC® MPIL2007 Result

SGI

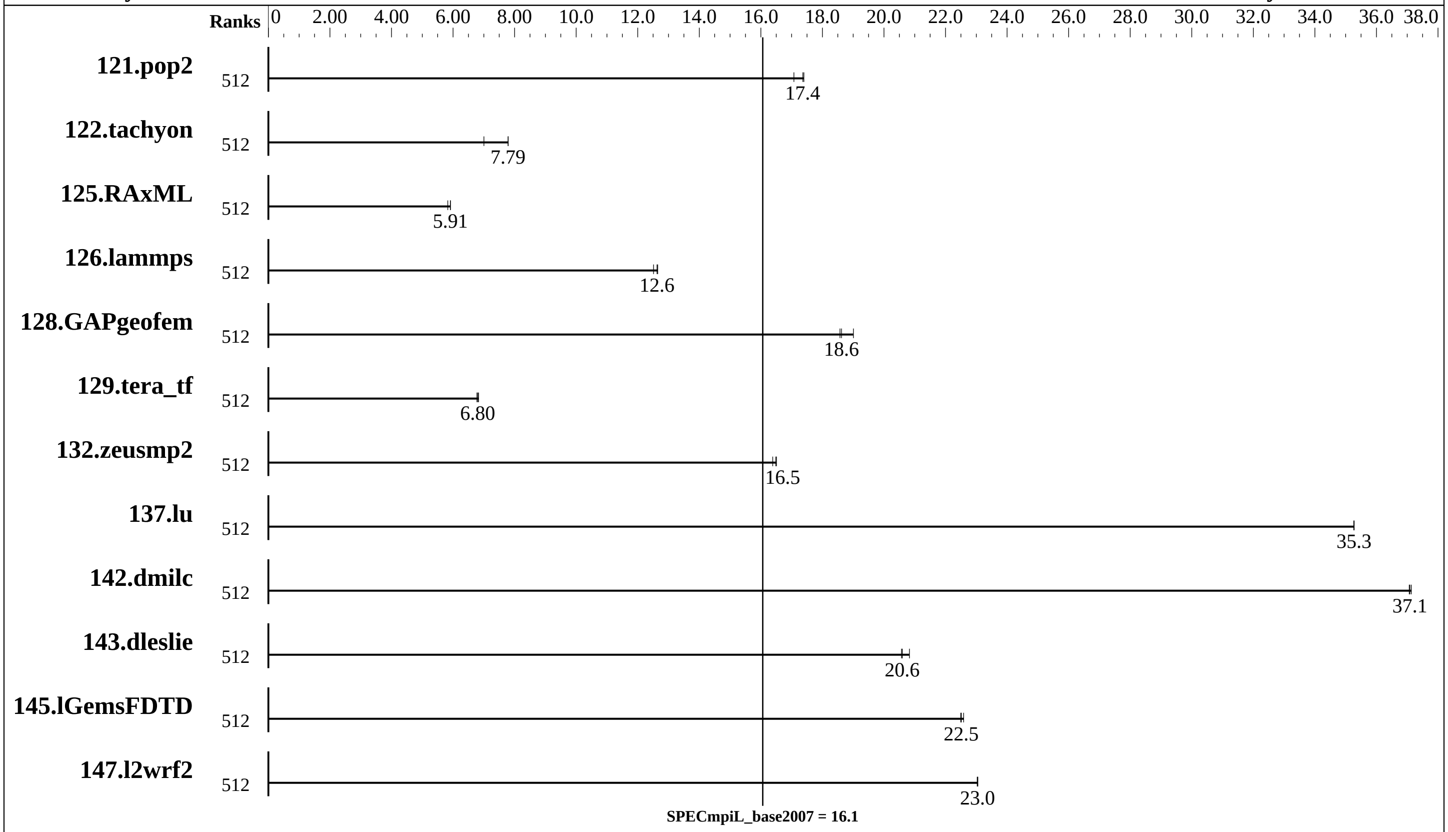
SGI Altix ICE 8200EX
(Intel Xeon X5560, 2.80 GHz)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 16.1

MPI2007 license: 4
Test sponsor: SGI
Tested by: SGI

Test date: Jan-2010
Hardware Availability: Sep-2009
Software Availability: Dec-2009



Results Table

	Base							Peak						
Benchmark	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
121.pop2	512	228	17.1	224	17.4	**224**	**17.4**							
122.tachyon	512	278	7.00	**250**	**7.79**	249	7.79							
125.RAxML	512	**494**	**5.91**	494	5.91	501	5.83							
126.lammps	512	194	12.6	**195**	**12.6**	196	12.5							
128.GAPgeofem	512	**319**	**18.6**	320	18.6	312	19.0							
129.tera_tf	512	**162**	**6.80**	162	6.77	161	6.83							
132.zeusmp2	512	**129**	**16.5**	129	16.4	128	16.5							
137.lu	512	119	35.3	119	35.3	**119**	**35.3**							
142.dmilc	512	**99.3**	**37.1**	99.4	37.1	99.2	37.1							
143.dleslie	512	**151**	**20.6**	151	20.6	149	20.8							
145.lGemsFDTD	512	**196**	**22.5**	196	22.5	195	22.6							
147.l2wrf2	512	356	23.1	**356**	**23.0**	356	23.0							

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

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Test sponsor:	SGI	**Hardware Availability:**	Sep-2009
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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:	64
Total Chips:	128
Total Cores:	512
Total Threads:	1024
Total Memory:	2304 GB
Base Ranks Run:	512
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:	64
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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Test sponsor:	SGI	**Hardware Availability:**	Sep-2009
Tested by:	SGI	**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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Tested by:	SGI	**Software Availability:**	Dec-2009

Interconnect Description: InfiniBand (I/O)

Hardware

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

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
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.
```

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

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

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

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