



# SPEC® MPIL2007 Result

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## SGI

SGI Altix ICE 8400EX  
(Intel Xeon X5680, 3.33 GHz)

SPECmpiL\_peak2007 = Not Run

SPECmpiL\_base2007 = 12.9

MPI2007 license: 4

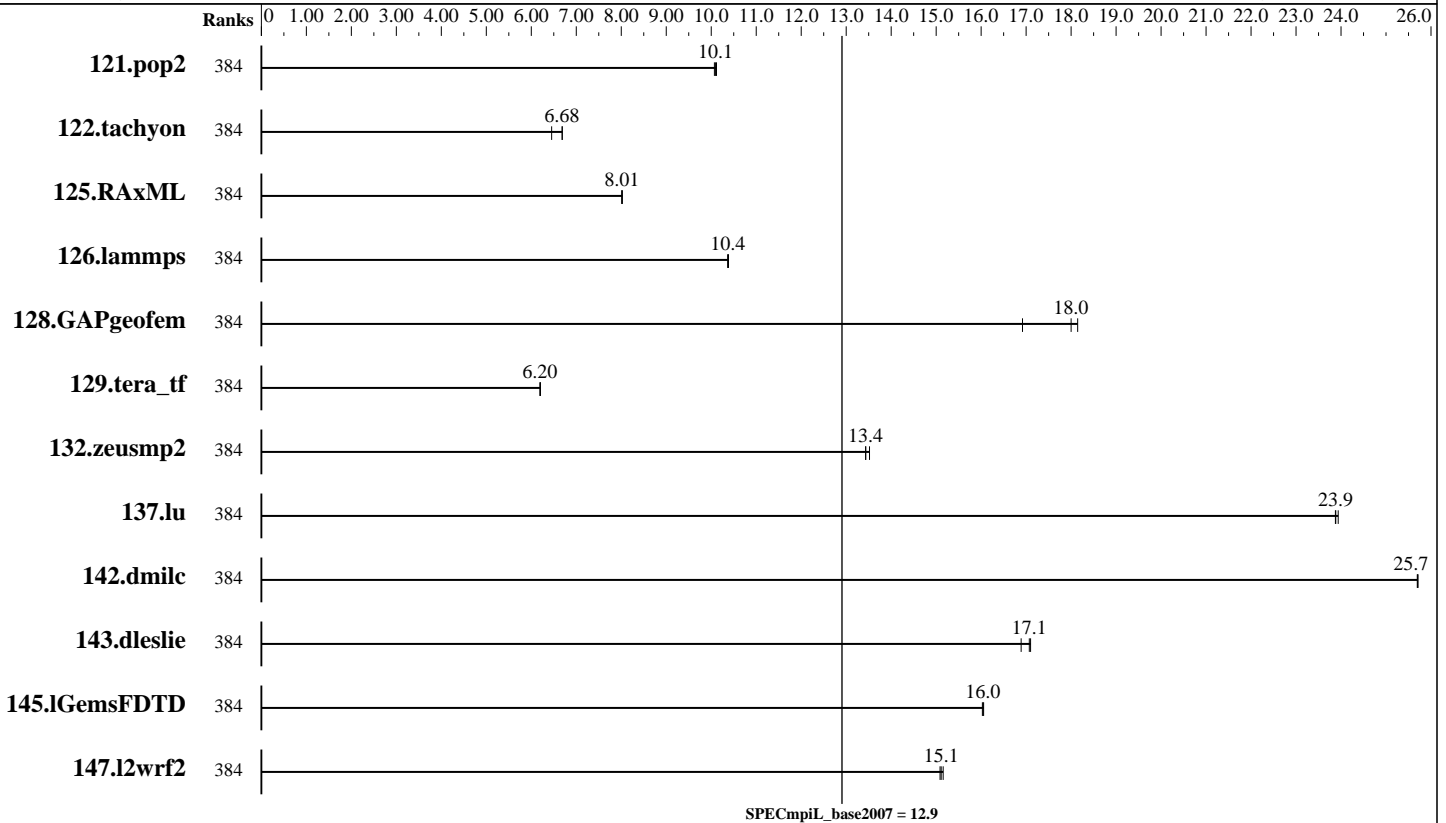
Test sponsor: SGI

Tested by: SGI

Test date: Sep-2010

Hardware Availability: May-2010

Software Availability: Oct-2010



## Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
121.pop2	384	386	10.1	<b>385</b>	<b>10.1</b>	385	10.1							
122.tachyon	384	301	6.45	291	6.69	<b>291</b>	<b>6.68</b>							
125.RAxML	384	364	8.02	364	8.01	<b>364</b>	<b>8.01</b>							
126.lammps	384	237	10.4	237	10.4	<b>237</b>	<b>10.4</b>							
128.GAPgeofem	384	327	18.1	<b>330</b>	<b>18.0</b>	351	16.9							
129.tera_tf	384	<b>177</b>	<b>6.20</b>	177	6.19	177	6.20							
132.zeusmp2	384	<b>158</b>	<b>13.4</b>	157	13.5	158	13.4							
137.lu	384	176	23.9	<b>176</b>	<b>23.9</b>	176	23.9							
142.dmilc	384	143	25.7	143	25.7	<b>143</b>	<b>25.7</b>							
143.dleslie	384	<b>182</b>	<b>17.1</b>	181	17.1	184	16.9							
145.lGemsFDTD	384	275	16.1	275	16.0	<b>275</b>	<b>16.0</b>							
147.l2wrf2	384	544	15.1	541	15.2	<b>543</b>	<b>15.1</b>							

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 8400EX 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: 384  
 Total Threads: 768  
 Total Memory: 768 GB  
 Base Ranks Run: 384  
 Minimum Peak Ranks: --  
 Maximum Peak Ranks: --

### Software Summary

C Compiler: Intel C Compiler for Linux  
 Version 11.1, Build 20100414  
 C++ Compiler: Intel C++ Compiler for Linux  
 Version 11.1, Build 20100414  
 Fortran Compiler: Intel Fortran Compiler for Linux  
 Version 11.1, Build 20100414  
 Base Pointers: 64-bit  
 Peak Pointers: 64-bit  
 MPI Library: SGI MPT 2.02 Beta  
 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 X5680, 3.33 GHz)  
 CPU Name: Intel Xeon X5680  
 CPU(s) orderable: 1-2 chips  
 Chips enabled: 2  
 Cores enabled: 12  
 Cores per chip: 6  
 Threads per core: 2  
 CPU Characteristics: Six Core, 3.33 GHz, 6.4 GT/s QPI  
 Intel Turbo Boost Technology up to 3.6 GHz  
 Hyper-Threading Technology enabled  
 CPU MHz: 3333  
 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\*4GB DDR3-1333 CL9 RDIMMs)  
 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  
 Data Rate: InfiniBand 4x QDR  
 Ports Used: 1  
 Interconnect Type: InfiniBand

### Software

Adapter: Mellanox MT26428 ConnectX IB QDR  
 (PCIe x8 Gen2 5 GT/s)  
 Adapter Driver: OFED-1.4.2  
 Adapter Firmware: 2.7.200  
 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 7 for Linux Service Pack 1,  
 SGI Tempo V 2.1



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Hardware Availability: May-2010

Software Availability: Oct-2010

## 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: 24 GB (6\*4GB 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 MT26418 ConnectX, MT25208 InfiniHost III  
 Ex  
 (PCIe x8 Gen2 5 GT/s, PCIe x8 Gen1 2.5 GT/s)  
 Number of Adapters: 2  
 Slot Type: PCIe x8 Gen2, PCIe x8 Gen1  
 Data Rate: InfiniBand 4x DDR  
 Ports Used: 2  
 Interconnect Type: InfiniBand

### Software

Adapter: Mellanox MT26418 ConnectX, MT25208 InfiniHost III  
 Ex  
 (PCIe x8 Gen2 5 GT/s, PCIe x8 Gen1 2.5 GT/s)  
 Adapter Driver: OFED-1.4.0  
 Adapter Firmware: 2.6.0 and 5.2.0  
 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

## Interconnect Description: InfiniBand (MPI)

### Hardware

Vendor: Mellanox Technologies and SGI  
 Model: MT26428 ConnectX  
 Switch Model: SGI QDR\_1.5\_HYPR\_2454 with Mellanox Device 48438  
 (Infiniscale IV)  
 Number of Switches: 32  
 Number of Ports: 36  
 Data Rate: InfiniBand 4x QDR  
 Firmware: 5030005  
 Topology: Enhanced Hypercube  
 Primary Use: MPI traffic

### Software



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Tested by: SGI

Test date: Sep-2010

Hardware Availability: May-2010

Software Availability: Oct-2010

### Interconnect Description: InfiniBand (I/O)

#### Hardware

#### Software

Vendor: Mellanox Technologies and SGI  
 Model: MT26428 ConnectX  
 Switch Model: SGI QDR\_1.5\_HYPR\_2454 with Mellanox Device 48438 (Infiniscale IV)  
 Number of Switches: 16  
 Number of Ports: 36  
 Data Rate: InfiniBand 4x QDR  
 Firmware: 5030005  
 Topology: Enhanced Hypercube  
 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\_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 96 ranks, 4 switches for 192 ranks, 8 switches for 384 ranks, 16 switches for 768 ranks, 32 switches for 1536 ranks.

### Base Compiler Invocation

C benchmarks:  
icc

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## Base Compiler Invocation (Continued)

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

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\\_Intel1111\\_flags.html](http://www.spec.org/mpi2007/flags/SGI_x86_64_Intel1111_flags.html)

You can also download the XML flags source by saving the following link:

[http://www.spec.org/mpi2007/flags/SGI\\_x86\\_64\\_Intel1111\\_flags.xml](http://www.spec.org/mpi2007/flags/SGI_x86_64_Intel1111_flags.xml)

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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