



SPEC[®] MPIL2007 Result

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SGI

SGI Altix ICE 8400EX
(AMD Opteron 6282 SE, 2.6GHz)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 16.4

MPI2007 license: 4

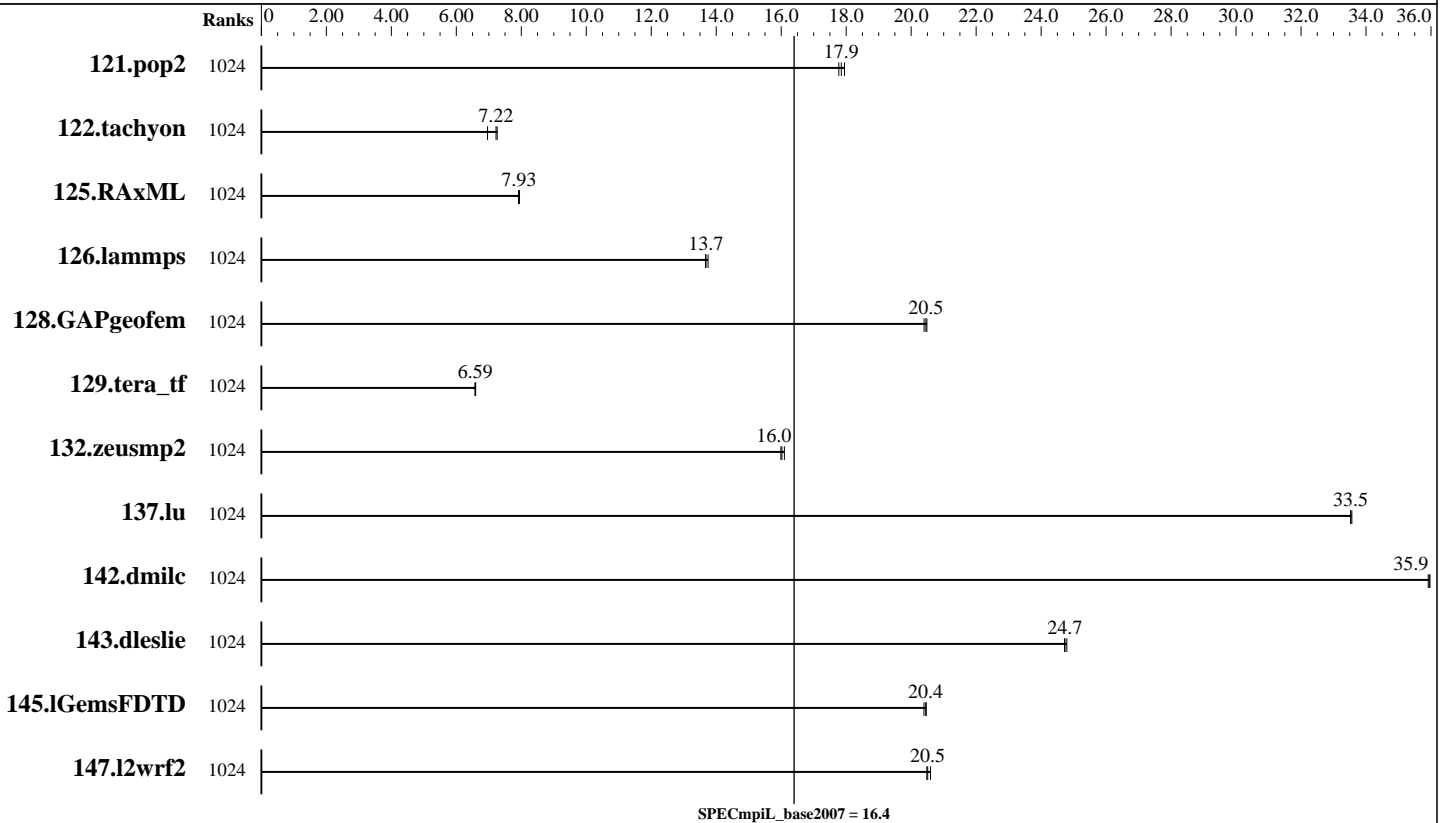
Test sponsor: SGI

Tested by: SGI

Test date: Jan-2012

Hardware Availability: Nov-2011

Software Availability: Nov-2011



Results Table

Benchmark	Base								Peak							
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
121.pop2	1024	217	17.9	<u>218</u>	<u>17.9</u>	219	17.8									
122.tachyon	1024	279	6.96	<u>269</u>	<u>7.22</u>	268	7.26									
125.RAxML	1024	367	7.95	<u>368</u>	<u>7.93</u>	369	7.91									
126.lammps	1024	179	13.7	<u>180</u>	<u>13.7</u>	180	13.7									
128.GAPgeofem	1024	<u>290</u>	<u>20.5</u>	291	20.4	290	20.5									
129.tera_tf	1024	167	6.60	<u>167</u>	<u>6.59</u>	167	6.57									
132.zeusmp2	1024	132	16.1	133	16.0	<u>132</u>	<u>16.0</u>									
137.lu	1024	<u>125</u>	<u>33.5</u>	125	33.5	125	33.6									
142.dmilc	1024	102	36.0	103	35.9	<u>102</u>	<u>35.9</u>									
143.dleslie	1024	<u>125</u>	<u>24.7</u>	125	24.8	125	24.7									
145.lGemsFDTD	1024	216	20.4	216	20.5	<u>216</u>	<u>20.4</u>									
147.l2wrf2	1024	398	20.6	<u>400</u>	<u>20.5</u>	401	20.5									

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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Hardware Summary

Software Summary

Type of System: Homogeneous
 Compute Node: SGI Altix ICE 8400EX Compute Node
 Interconnect: InfiniBand (MPI and I/O)
 File Server Node: SGI InfiniteStorage 4000
 Total Compute Nodes: 32
 Total Chips: 64
 Total Cores: 1024
 Total Threads: 1024
 Total Memory: 4 TB
 Base Ranks Run: 1024
 Minimum Peak Ranks: --
 Maximum Peak Ranks: --

C Compiler: Intel C++ Composer XE 2011 for Linux, Version 12.1.1.256 Build 20111011
 C++ Compiler: Intel C++ Composer XE 2011 for Linux, Version 12.1.1.256 Build 20111011
 Fortran Compiler: Intel Fortran Composer XE 2011 for Linux, Version 12.1.1.256 Build 20111011
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 MPI Library: SGI MPT 2.05
 Other MPI Info: OFED 1.5.2
 Pre-processors: None
 Other Software: None

Node Description: SGI Altix ICE 8400EX Compute Node

Hardware

Software

Number of nodes: 32
 Uses of the node: compute
 Vendor: SGI
 Model: SGI Altix ICE 8400EX (AMD Opteron 6282 SE, 2.6GHz)
 CPU Name: AMD Opteron 6282 SE
 CPU(s) orderable: 1-2 chips
 Chips enabled: 2
 Cores enabled: 32
 Cores per chip: 16
 Threads per core: 1
 CPU Characteristics: 16 cores/chip, 2.6 GHz
 AMD Turbo CORE technology up to 3.30 GHz
 CPU MHz: 2600
 Primary Cache: 512 KB I on chip per chip,
 64 KB I shared / 2 cores;
 16 KB D on chip per core
 Secondary Cache: 16 MB I+D on chip per chip, 2 MB I+D on chip per core
 L3 Cache: 16 MB I+D on chip per chip, 8 MB shared / 8 cores
 Other Cache: None
 Memory: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)
 Disk Subsystem: None
 Other Hardware: None
 Adapter: Mellanox MT26428 ConnectX IB QDR (PCIe x8 Gen2 5 GT/s)
 Number of Adapters: 1
 Slot Type: PCIe x8 Gen2
 Data Rate: InfiniBand 4x QDR
 Ports Used: 2
 Interconnect Type: InfiniBand

Adapter: Mellanox MT26428 ConnectX IB QDR (PCIe x8 Gen2 5 GT/s)
 Adapter Driver: OFED-1.5.2
 Adapter Firmware: 2.7.0
 Operating System: SUSE Linux Enterprise Server 11 SP1 (x86_64) Kernel 2.6.32.46-0.3-default #1 SMP
 Local File System: NFSv3
 Shared File System: NFSv3 IPoIB
 System State: Run level 3 (Multi-User)
 Other Software: SGI Performance Suite 1.3, Build 705rp8.sles11-1111092106
 SGI Tempo Compute Node 2.5, Build 705r10.sles11-11110192111



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Software Availability: Nov-2011

Node Description: SGI InfiniteStorage 4000

Hardware

Number of nodes: 1
Uses of the node: fileserver
Vendor: SGI
Model: SGI Altix 450 (Intel Itanium 2, 1.6GHz)
CPU Name: Intel Itanium 2 9030
CPU(s) orderable: 2-38 chips
Chips enabled: 2
Cores enabled: 4
Cores per chip: 2
Threads per core: 1
CPU Characteristics: 1.6GHz/8MB, 533MHz FSB
CPU MHz: 1600
Primary Cache: 16 KB I + 16 KB D on chip per core
Secondary Cache: 1 MB I + 256 KB D on chip per core
L3 Cache: 4 MB I+D on chip per core
Other Cache: None
Memory: 24 GB (12 x 2 GB, 2Rx4 PC2-3200-3, ECC)
Disk Subsystem: 16 TB RAID 5
32 x 500 GB SATA (Seagate Barracuda 7.2K)
Other Hardware: None
Adapter: Mellanox MT25208 InfiniHost III Ex (PCIe x8 Gen1 2.5 GT/s)
Number of Adapters: 2
Slot Type: PCIe x8 Gen1
Data Rate: InfiniBand 4x DDR
Ports Used: 2
Interconnect Type: InfiniBand

Software

Adapter: Mellanox MT25208 InfiniHost III Ex (PCIe x8 Gen1 2.5 GT/s)
Adapter Driver: OFED-1.4.2
Adapter Firmware: 5.3.0
Operating System: SUSE Linux Enterprise Server 11 SP1 (ia64) Kernel 2.6.32.12-0.7-default
Local File System: xfs
Shared File System: --
System State: Run Level 3 (Multi-User)
Other Software: SGI ProPack 7SP1 for Linux, Build 701r2.sles11-1005242307

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
Firmware: 5040005
Topology: Enhanced Hypercube
Primary Use: MPI and I/O traffic

Software



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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 2.0

Job Placement:

In the base run, each MPI job is assigned to a topologically compact set of nodes, i.e. the minimal needed number of switches was used for each job: 2 switch for up to 256 ranks, 4 switches for 512 ranks, 8 switches for 1024 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.

SGI manufactures its own switch blades using unmodified Mellanox switch ASICs. The test system has SGI QDR_1.5_HYPR_2454 switch with Mellanox 36-port QDR Infiniband switch Device 48438 (InfiniScale IV).

Base Compiler Invocation

C benchmarks:

icc

C++ benchmarks:

126.lammps: icpc

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icc ifort



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Base Portability Flags

121.pop2: -DSPEC_MPI_CASE_FLAG

Base Optimization Flags

C benchmarks:

-O3 -xSSE2 -ipo -no-prec-div

C++ benchmarks:

126.lammps: -O3 -xSSE2 -ipo -no-prec-div -ansi-alias

Fortran benchmarks:

-O3 -xSSE2 -ipo -no-prec-div

Benchmarks using both Fortran and C:

-O3 -xSSE2 -ipo -no-prec-div

Base Other Flags

C benchmarks:

-lmpi

C++ benchmarks:

126.lammps: -lmpi

Fortran benchmarks:

-lmpi

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_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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