



SPEC® MPIL2007 Result

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SGI

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

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 1.25

MPI2007 license: 4

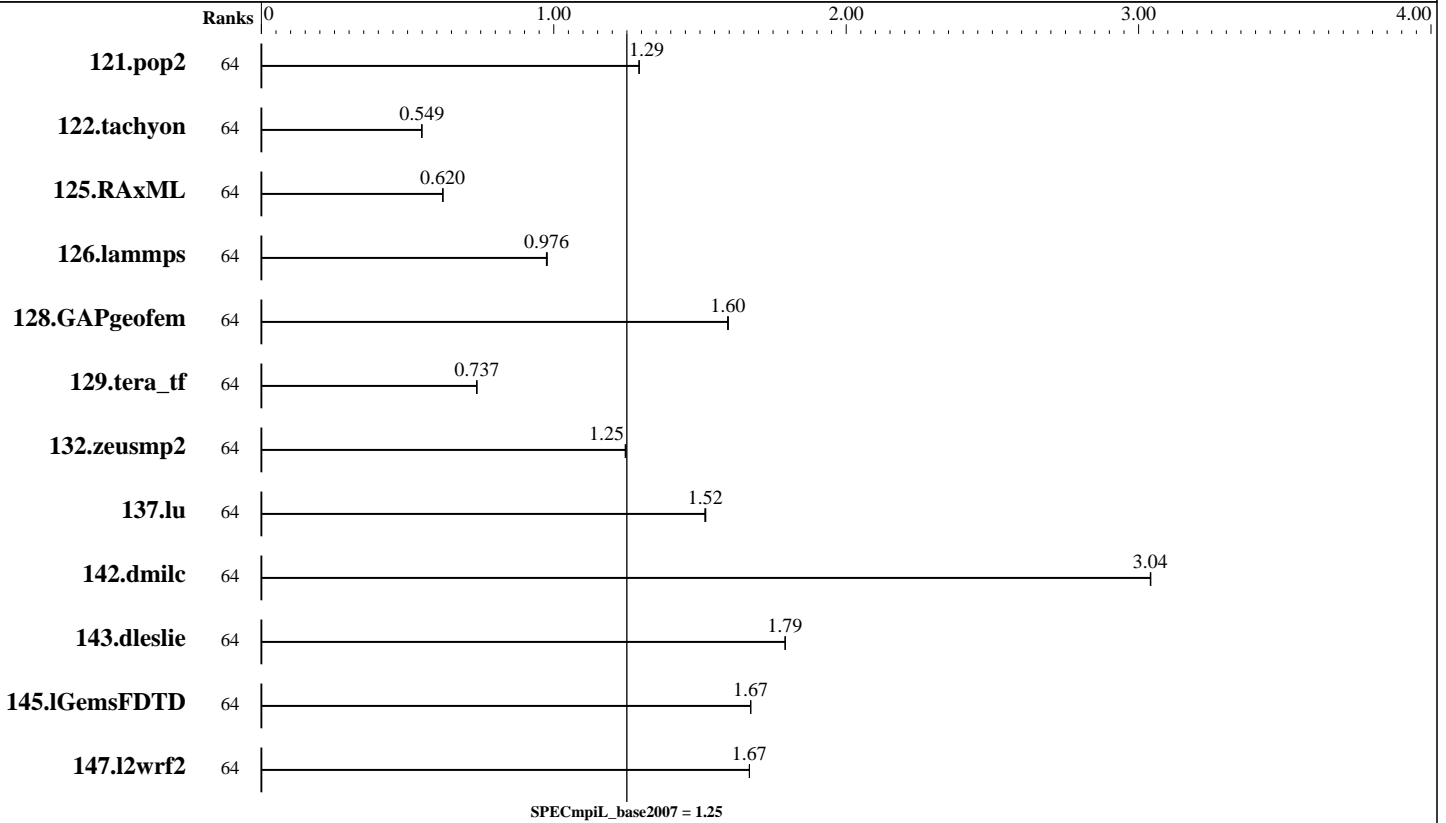
Test sponsor: SGI

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	64	3013	1.29	3012	1.29	3011	1.29							
122.tachyon	64	3543	0.549	3540	0.549	3546	0.548							
125.RAxML	64	4698	0.621	4709	0.620	4705	0.620							
126.lammps	64	2523	0.975	2519	0.976	2515	0.978							
128.GAPgeofem	64	3720	1.60	3721	1.59	3716	1.60							
129.tera_tf	64	1493	0.736	1491	0.737	1491	0.737							
132.zeusmp2	64	1704	1.24	1702	1.25	1701	1.25							
137.lu	64	2767	1.52	2771	1.52	2765	1.52							
142.dmilc	64	1212	3.04	1212	3.04	1211	3.04							
143.dleslie	64	1731	1.79	1731	1.79	1730	1.79							
145.lGemsFDTD	64	2636	1.67	2636	1.67	2636	1.67							
147.l2wrf2	64	4916	1.67	4915	1.67	4915	1.67							

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

Standard Performance Evaluation Corporation

info@spec.org

http://www.spec.org/



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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: 2
 Total Chips: 4
 Total Cores: 64
 Total Threads: 64
 Total Memory: 256 GB
 Base Ranks Run: 64
 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: 2
 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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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: 2
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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