SPEC® MPIM2007 Result

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SGI

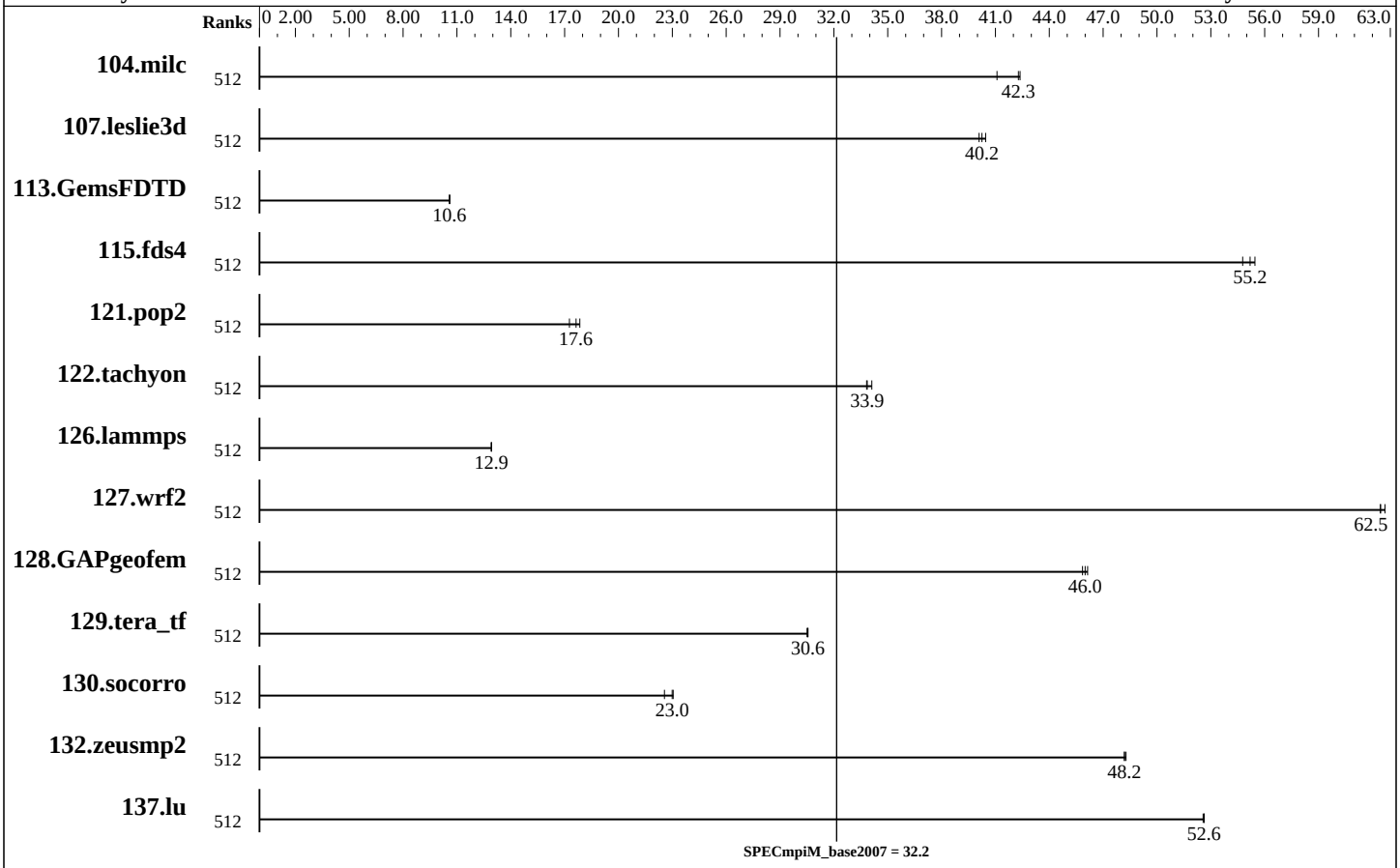
SGI Altix ICE 8400EX
(AMD Opteron 6282 SE, 2.6GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 32.2

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

Test date: Feb-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
104.milc	512	38.1	41.1	**37.0**	**42.3**	36.9	42.4							
107.leslie3d	512	129	40.5	**130**	**40.2**	130	40.1							
113.GemsFDTD	512	**596**	**10.6**	595	10.6	596	10.6							
115.fds4	512	35.2	55.5	35.6	54.8	**35.4**	**55.2**							
121.pop2	512	239	17.3	231	17.8	**234**	**17.6**							
122.tachyon	512	**82.6**	**33.9**	82.0	34.1	82.7	33.8							
126.lammps	512	225	12.9	**226**	**12.9**	226	12.9							
127.wrf2	512	124	62.7	125	62.4	**125**	**62.5**							
128.GAPgeofem	512	44.8	46.1	45.0	45.9	**44.9**	**46.0**							
129.tera_tf	512	90.7	30.5	90.6	30.6	**90.6**	**30.6**							

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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Results Table (Continued)

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
130.socorro	512	**166**	**23.0**	169	22.6	166	23.0							
132.zeusmp2	512	64.3	48.3	**64.4**	**48.2**	64.4	48.2							
137.lu	512	69.9	52.6	69.9	52.6	**69.9**	**52.6**							

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

Hardware 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:	16
Total Chips:	32
Total Cores:	512
Total Threads:	512
Total Memory:	2 TB
Base Ranks Run:	512
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--

Software Summary

C Compiler:	Intel C Compiler for Linux, Version 11.1.073 Build 20100806
C++ Compiler:	Intel C++ Compiler for Linux, Version 11.1.073 Build 20100806
Fortran Compiler:	Intel Fortran Compiler for Linux, Version 11.1.073 Build 20100806
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

Number of nodes:	16
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)

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Software

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.sles11-1110192111

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

Test date: Feb-2012
Hardware Availability: Nov-2011
Software Availability: Nov-2011

Node Description: SGI Altix ICE 8400EX Compute Node

Number of Adapters:	1
Slot Type:	PCIe x8 Gen2
Data Rate:	InfiniBand 4x QDR
Ports Used:	2
Interconnect Type:	InfiniBand

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:	4
Number of Ports:	36

Software

Continued on next page

Interconnect Description: InfiniBand (MPI and I/O)

Data Rate:	InfiniBand 4x QDR
Firmware:	5040005
Topology:	Enhanced Hypercube
Primary Use:	MPI and 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 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.

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:

Continued on next page

Base Compiler Invocation (Continued)

126.lammps: `icpc`

Fortran benchmarks:
`ifort`

Benchmarks using both Fortran and C:
`icc ifort`

Base Portability Flags

121.pop2: `-DSPEC_MPI_CASE_FLAG`
127.wrf2: `-DSPEC_MPI_CASE_FLAG -DSPEC_MPI_LINUX`

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_Intel111_flags.20120720.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.20120720.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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