



SPEC[®] MPIM2007 Result

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SGI

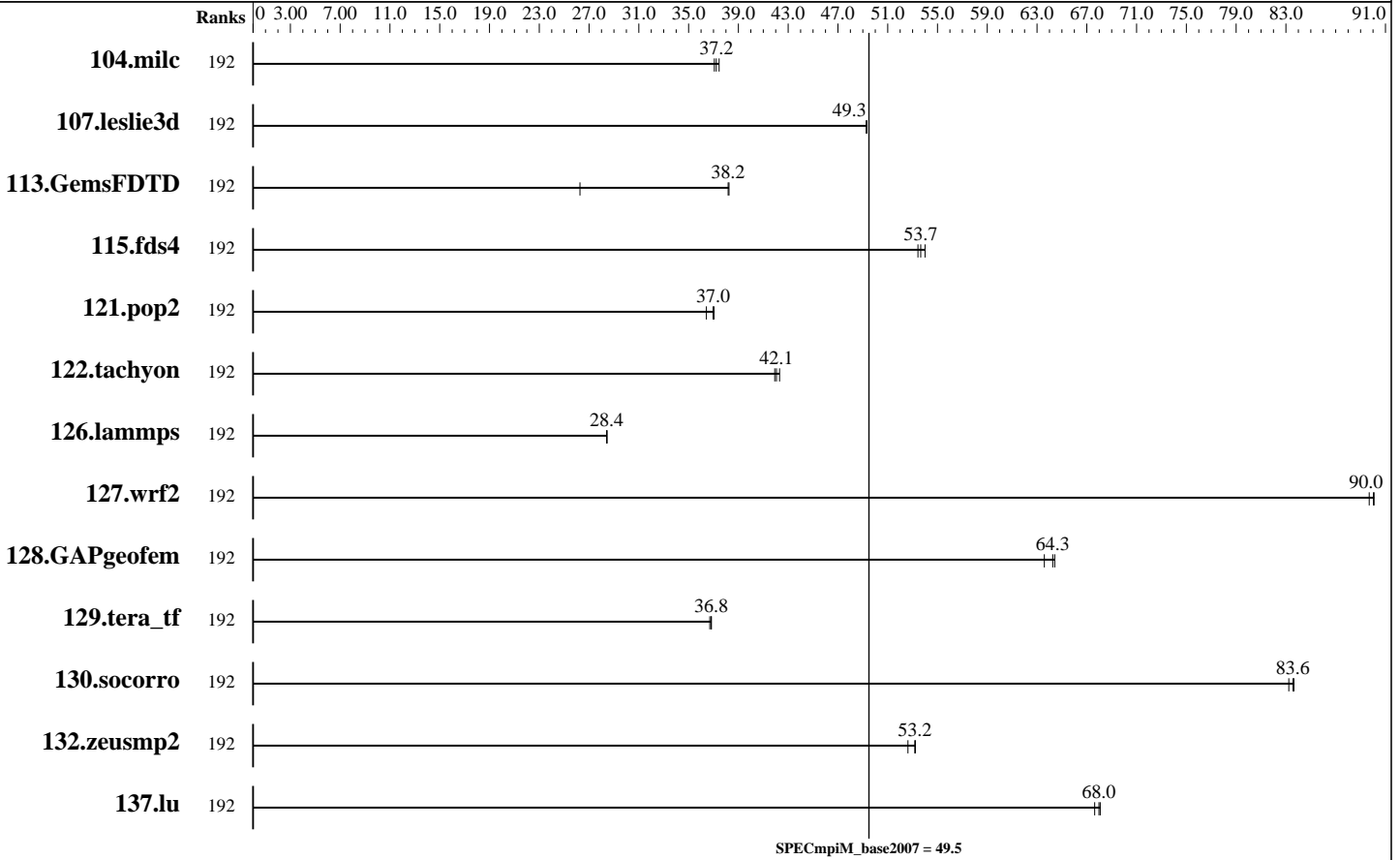
SGI ICE X
(Intel Xeon E5-2690 v3, 2.6 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 49.5

MPI2007 license: 14
Test sponsor: SGI
Tested by: SGI

Test date: Jul-2014
Hardware Availability: Sep-2014
Software Availability: Apr-2014



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	192	42.2	37.1	41.8	37.5	<u>42.0</u>	<u>37.2</u>							
107.leslie3d	192	106	49.3	106	49.3	<u>106</u>	<u>49.3</u>							
113.GemsFDTD	192	240	26.3	<u>165</u>	<u>38.2</u>	165	38.2							
115.fds4	192	36.5	53.4	36.1	54.0	<u>36.4</u>	<u>53.7</u>							
121.pop2	192	<u>112</u>	<u>37.0</u>	111	37.0	113	36.4							
122.tachyon	192	<u>66.5</u>	<u>42.1</u>	66.1	42.3	66.7	41.9							
126.lammps	192	103	28.4	<u>103</u>	<u>28.4</u>	103	28.4							
127.wrf2	192	86.9	89.7	<u>86.6</u>	<u>90.0</u>	86.5	90.1							
128.GAPgeofem	192	32.1	64.4	<u>32.1</u>	<u>64.3</u>	32.5	63.6							
129.tera_tf	192	75.2	36.8	75.4	36.7	<u>75.2</u>	<u>36.8</u>							

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	192	45.6	83.6	<u>45.7</u>	<u>83.6</u>	45.9	83.2							
132.zeusmp2	192	58.3	53.2	59.0	52.6	<u>58.4</u>	<u>53.2</u>							
137.lu	192	<u>54.1</u>	<u>68.0</u>	54.0	68.1	54.4	67.6							

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 ICE X IP-131 Compute Node
 Interconnect: InfiniBand (MPI and I/O)
 File Server Node: SGI Rackable C1103-TY12
 Total Compute Nodes: 8
 Total Chips: 16
 Total Cores: 192
 Total Threads: 192
 Total Memory: 1 TB
 Base Ranks Run: 192
 Minimum Peak Ranks: --
 Maximum Peak Ranks: --

Software Summary

C Compiler: Intel C++ Composer XE 2013 for Linux, Version 14.0.3.174 Build 20140422
 C++ Compiler: Intel C++ Composer XE 2013 for Linux, Version 14.0.3.174 Build 20140422
 Fortran Compiler: Intel Fortran Composer XE 2013 for Linux, Version 14.0.3.174 Build 20140422
 Base Pointers: 64-bit
 Peak Pointers: Not Applicable
 MPI Library: SGI MPT 2.09 Patch 11049
 Other MPI Info: OFED 1.5.4
 Pre-processors: None
 Other Software: None

Node Description: SGI ICE X IP-131 Compute Node

Hardware

Number of nodes: 8
 Uses of the node: compute
 Vendor: SGI
 Model: SGI ICE X (Intel Xeon E6-2690 v3, 2.6 GHz)
 CPU Name: Intel Xeon E5-2690 v3
 CPU(s) orderable: 1-2 chips
 Chips enabled: 2
 Cores enabled: 24
 Cores per chip: 12
 Threads per core: 1
 CPU Characteristics: 12 Core, 2.60 GHz, 9.6 GT/s QPI
 Intel Turbo Boost Technology up to 3.50 GHz
 Hyper-Threading Technology disabled
 CPU MHz: 2600
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 256 KB I+D on chip per core
 L3 Cache: 30 MB I+D on chip per chip
 Other Cache: None
 Memory: 128 GB (8 x 16 GB 2Rx4 PC4-17000R-15, ECC)
 Disk Subsystem: None
 Other Hardware: None
 Adapter: Mellanox MT27500 with ConnectX-3 ASIC (PCIe x8 Gen3 8 GT/s)
 Number of Adapters: 2
 Slot Type: PCIe x8 Gen3

Software

Adapter: Mellanox MT27500 with ConnectX-3 ASIC (PCIe x8 Gen3 8 GT/s)
 Adapter Driver: OFED 1.5.4
 Adapter Firmware: 2.30.3000
 Operating System: SUSE Linux Enterprise Server 11 SP3 (x86_64), Kernel 3.0.93-0.8-default
 Local File System: NFSv3
 Shared File System: NFSv3 IPoIB
 System State: Multi-user, run level 3
 Other Software: SGI Tempo Service Node 2.8.1, Build 709rp49.sles11sp3-1402182002

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Node Description: SGI ICE X IP-131 Compute Node

Data Rate: InfiniBand 4x FDR
Ports Used: 2
Interconnect Type: InfiniBand

Node Description: SGI Rackable C1103-TY12

Hardware

Number of nodes: 1
Uses of the node: fileserver
Vendor: SGI
Model: SGI Rackable C1103-TY12 (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: 96 GB (12 * 8 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem: 12 TB RAID 6
12 x 1 TB SATA (Seagate Constellation, 7200RPM)
Other Hardware: None
Adapter: Mellanox MT27500 with ConnectX-3 ASIC (PCIe x8 Gen3 8 GT/s)
Number of Adapters: 2
Slot Type: PCIe x8 Gen3
Data Rate: InfiniBand 4x FDR
Ports Used: 2
Interconnect Type: InfiniBand

Software

Adapter: Mellanox MT27500 with ConnectX-3 ASIC (PCIe x8 Gen3 8 GT/s)
Adapter Driver: OFED-1.5.2
Adapter Firmware: 2.30.3000
Operating System: SUSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.46-0.3-default
Local File System: xfs
Shared File System: --
System State: Multi-user, run level 3
Other Software: SGI Foundation Software 2.5, Build 705r10.sles11-1110192111

Interconnect Description: InfiniBand (MPI and I/O)

Hardware

Vendor: Mellanox Technologies and SGI
Model: None
Switch Model: SGI FDR Integrated IB Switch Blade 2SW9x27 with Mellanox SwitchX device 51000
Number of Switches: 2
Number of Ports: 36
Data Rate: InfiniBand 4x FDR

Software

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Interconnect Description: InfiniBand (MPI and I/O)

Firmware: 09.02.3000
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_IB_RAILS=2
ulimit -s unlimited
```

BIOS settings:

```
AMI BIOS version DY2E6044
Hyper-Threading Technology disabled
Intel Turbo Boost Technology enabled (default)
Intel Turbo Boost Technology activated with
modprobe acpi_cpufreq
cpupower frequency-set -u 2601MHz -d 2601MHz -g performance
```

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 up to 192 ranks, 4 switches for up to 384 ranks, 8 switches for 768 ranks, and 16 switches for 1536 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.

Base Compiler Invocation

C benchmarks:

icc

C++ benchmarks:

126.lammps: icpc

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Base Compiler Invocation (Continued)

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

130.socorro: -assume nostd_intent_in

Base Optimization Flags

C benchmarks:

-O3 -xCORE-AVX2 -no-prec-div

C++ benchmarks:

126.lammps: -O3 -xCORE-AVX2 -no-prec-div -ansi-alias

Fortran benchmarks:

-O3 -xCORE-AVX2 -no-prec-div

Benchmarks using both Fortran and C:

-O3 -xCORE-AVX2 -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_Intel14_flags.20140908.html

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

http://www.spec.org/mpi2007/flags/SGI_x86_64_Intel14_flags.20140908.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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