



SPEC® MPIM2007 Result

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SGI

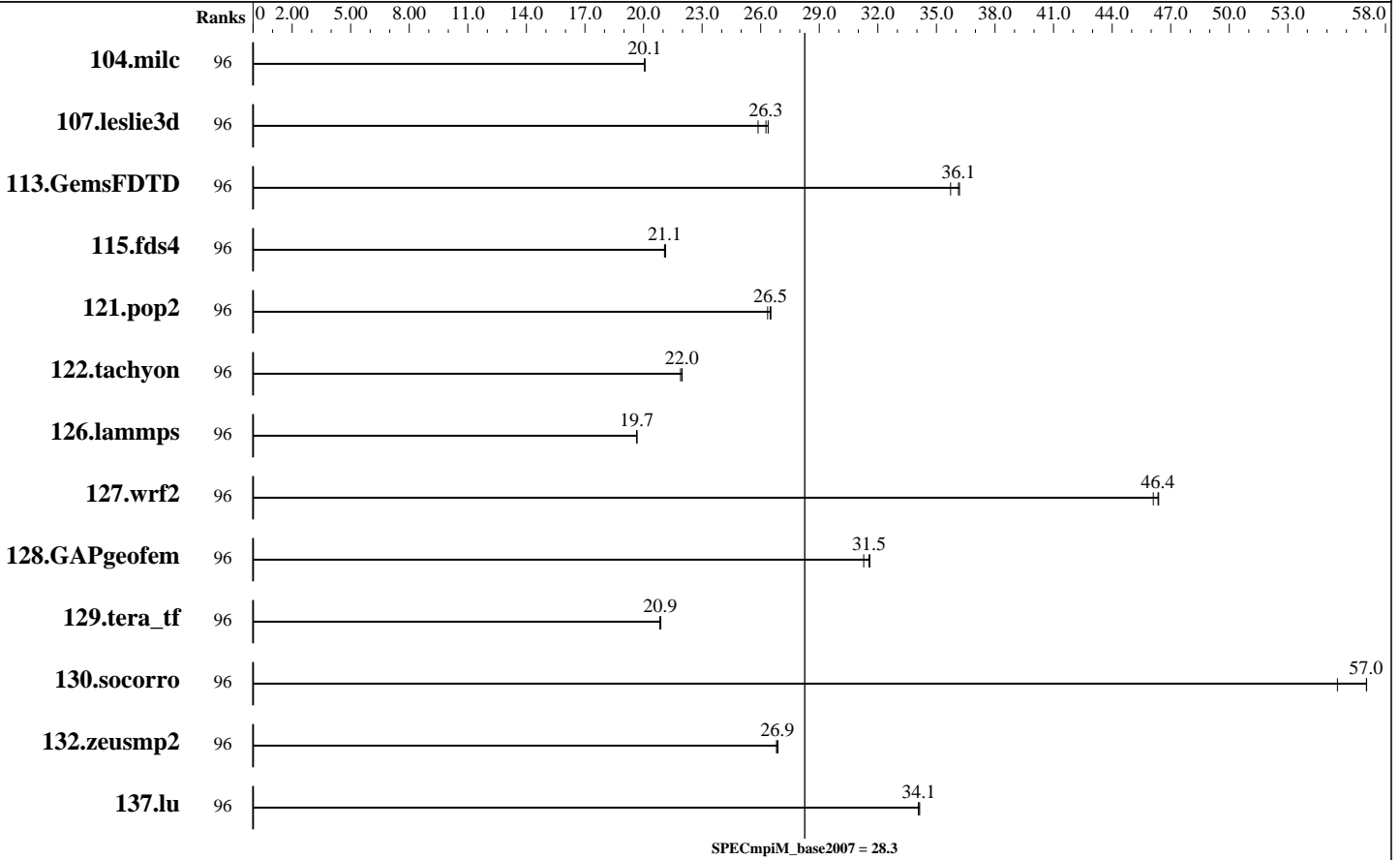
SGI ICE X
(Intel Xeon E5-2690 v3, 2.6 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 28.3

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	96	78.1	20.0	78.0	20.1	78.0	20.1							
107.leslie3d	96	202	25.9	198	26.4	199	26.3							
113.GemsFDTD	96	177	35.7	175	36.1	174	36.2							
115.fds4	96	92.5	21.1	92.6	21.1	92.3	21.1							
121.pop2	96	156	26.5	156	26.5	157	26.4							
122.tachyon	96	127	22.0	128	21.9	127	22.0							
126.lammgs	96	148	19.7	148	19.7	148	19.7							
127.wrf2	96	168	46.4	168	46.4	169	46.1							
128.GAPgeofem	96	65.5	31.5	66.0	31.3	65.4	31.6							
129.tera_tf	96	133	20.9	133	20.8	133	20.9							

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	96	68.7	55.5	<u>66.9</u>	<u>57.0</u>	66.9	57.0							
132.zeusmp2	96	<u>116</u>	<u>26.9</u>	116	26.8	115	26.9							
137.lu	96	108	34.1	108	34.1	<u>108</u>	<u>34.1</u>							

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: 4
 Total Chips: 8
 Total Cores: 96
 Total Threads: 96
 Total Memory: 512 GB
 Base Ranks Run: 96
 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: 4
 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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