



SPEC® MPIM2007 Result

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SGI

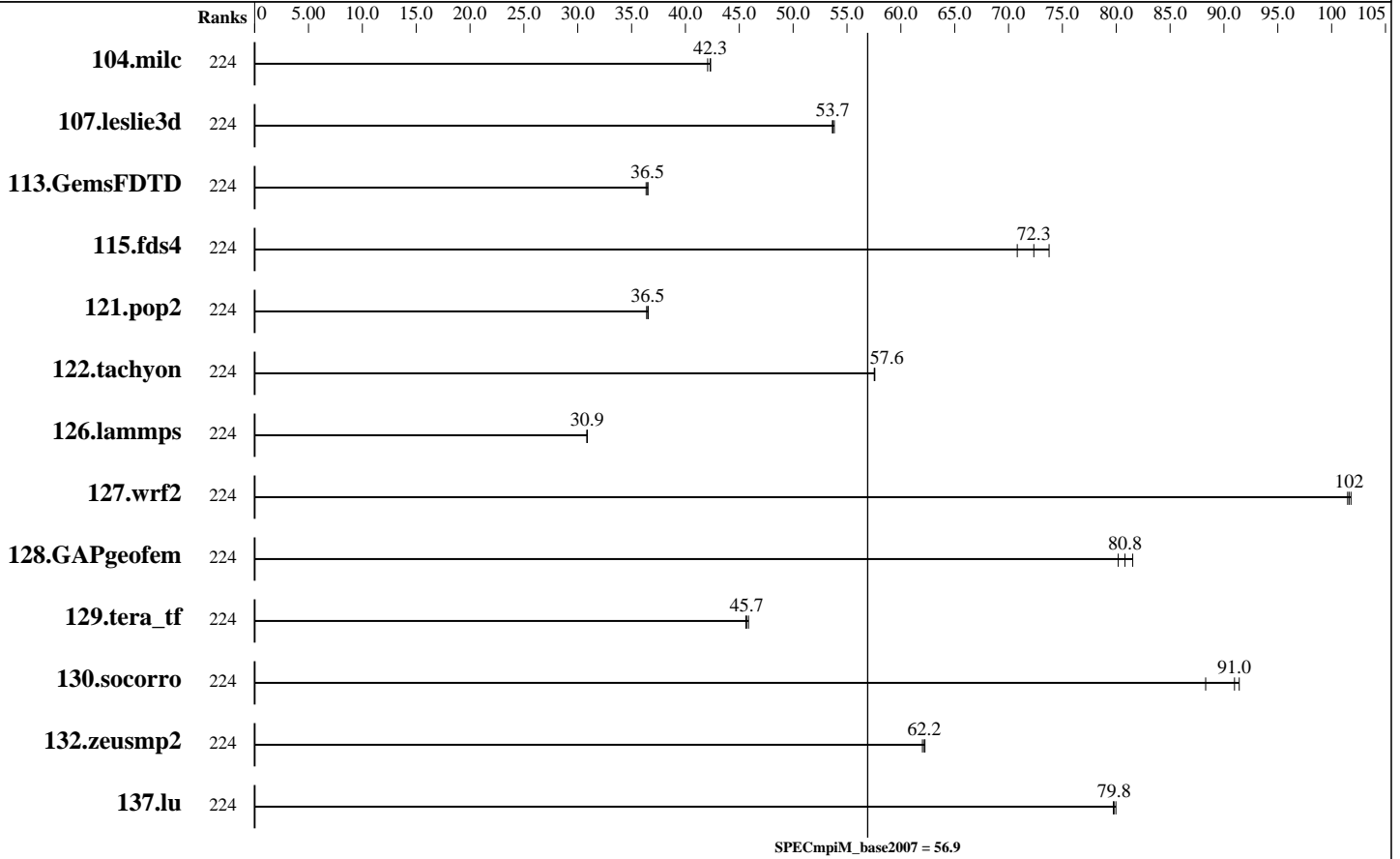
SGI ICE XA
(Intel Xeon E5-2690 v4, 2.6 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 56.9

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

Test date: Jun-2016
Hardware Availability: May-2016
Software Availability: Jun-2016



Results Table

Benchmark	Base								Peak							
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
104.milc	224	37.2	42.1	37.0	42.3	37.0	42.3									
107.leslie3d	224	97.3	53.6	97.2	53.7	97.0	53.8									
113.GemsFDTD	224	173	36.5	173	36.5	174	36.3									
115.fds4	224	27.6	70.8	26.4	73.8	27.0	72.3									
121.pop2	224	113	36.4	113	36.5	113	36.5									
122.tachyon	224	48.6	57.6	48.6	57.6	48.6	57.5									
126.lammps	224	94.4	30.9	94.4	30.9	94.5	30.8									
127.wrf2	224	76.8	101	76.7	102	76.6	102									
128.GAPgeofem	224	25.6	80.8	25.8	80.2	25.3	81.5									
129.tera_tf	224	60.6	45.7	60.7	45.6	60.4	45.9									

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	224	43.2	88.3	42.0	91.0	41.8	91.4							
132.zeusmp2	224	49.9	62.2	50.0	62.0	49.9	62.2							
137.lu	224	46.1	79.7	46.1	79.8	46.0	80.0							

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 XA IP-125 CS
 Interconnect: InfiniBand (MPI and I/O)
 File Server Node: SGI MIS Server
 Total Compute Nodes: 8
 Total Chips: 16
 Total Cores: 224
 Total Threads: 224
 Total Memory: 1 TB
 Base Ranks Run: 224
 Minimum Peak Ranks: --
 Maximum Peak Ranks: --

Software Summary

C Compiler: Intel C++ Composer XE 2016 for Linux, Version 16.0.3.210 Build 20160415
 C++ Compiler: Intel C++ Composer XE 2016 for Linux, Version 16.0.3.210 Build 20160405
 Fortran Compiler: Intel Fortran Composer XE 2016 for Linux, Version 16.0.3.210 Build 20160405
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 MPI Library: SGI MPT 2.14 Patch 11328
 Other MPI Info: OFED 3.2.2
 Pre-processors: None
 Other Software: None

Node Description: SGI ICE XA IP-125 CS

Hardware

Number of nodes: 8
 Uses of the node: compute
 Vendor: SGI
 Model: SGI ICE XA (Intel Xeon E5-2690 v4, 2.6 GHz)
 CPU Name: Intel Xeon E5-2690 v4
 CPU(s) orderable: 1-2 chips
 Chips enabled: 2
 Cores enabled: 28
 Cores per chip: 14
 Threads per core: 1
 CPU Characteristics: 14 Core, 2.60 GHz, 9.6 GT/s QPI
 Intel Turbo Boost Technology up to 3.50 GHz
 Hyper-Threading Technology enabled
 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: 35 MB I+D on chip per chip
 Other Cache: None
 Memory: 128 GB (8 x 16 GB 2Rx4 PC4-2400T-R)
 Disk Subsystem: None
 Other Hardware: None
 Adapter: Mellanox MT27700 with ConnectX-4 ASIC (PCIe x16 Gen3 8 GT/s)
 Number of Adapters: 2
 Slot Type: PCIe x16 Gen3

Software

Adapter: Mellanox MT27700 with ConnectX-4 ASIC (PCIe x16 Gen3 8 GT/s)
 Adapter Driver: OFED-3.2.1.5.3
 Adapter Firmware: 12.14.0114
 Operating System: SUSE Linux Enterprise Server 11 SP4 (x86_64), Kernel 3.0.101-71.1.10690.1.PTF-default
 Local File System: NFSv3
 Shared File System: NFSv3 IPoIB
 System State: Multi-user, run level 3
 Other Software: SGI Tempo Compute Node 3.3.0, Build 714r18.sles11sp4-1604041900

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Node Description: SGI ICE XA IP-125 CS

Data Rate: InfiniBand 4X EDR
Ports Used: 1
Interconnect Type: InfiniBand

Node Description: SGI MIS Server

Hardware

Number of nodes: 1
Uses of the node: fileserver
Vendor: SGI
Model: SGI MIS Server
CPU Name: Intel Xeon E5-2670
CPU(s) orderable: 1-2 chips
Chips enabled: 2
Cores enabled: 16
Cores per chip: 8
Threads per core: 1
CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz
Hyper-Threading Technology disabled
CPU MHz: 1200
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core
L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (12 * 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem: 45 TB RAID 6
8 x 6+2 900GB (WD, 10K RPM)
Other Hardware: None
Adapter: Mellanox MT27500 with ConnectX-3 ASIC
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
Adapter Driver: OFED-3.2.0.1.1
Adapter Firmware: 2.36.5000
Operating System: SUSE Linux Enterprise Server 11 (x86_64),
Kernel 3.0.101-0.46-default
Local File System: xfs
Shared File System: --
System State: Multi-user, run level 3
Other Software: SGI Foundation Software 2.9,
Build 711r2.sles11sp3-1411192056

Interconnect Description: InfiniBand (MPI and I/O)

Hardware

Vendor: Mellanox Technologies and SGI
Model: None
Switch Model: SGI P0002145
Number of Switches: 2
Number of Ports: 36
Data Rate: InfiniBand 4x EDR
Firmware: 11.0350.0394
Topology: Enhanced Hypercube

Software

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Interconnect Description: InfiniBand (MPI and I/O)

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
export MPI_IB_UPGRADE_SENDS=50
export MPI_IB_IMM_UPGRADE=false
export MPI_IB_DCIS=2
export MPI_CONNECTIONS_THRESHOLD=0
export MPI_IB_MTU=4096
ulimit -s unlimited
```

BIOS settings:

```
AMI BIOS version HA012036
Hyper-Threading Technology disabled
Intel Turbo Boost Technology enabled (default)
Transparent Hugepages Enabled
```

Job Placement:

Each MPI job was assigned to a topologically compact set of nodes using 14 ranks per socket.

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

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icc ifort



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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

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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