SPEC® MPIM2007 Result

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SGI

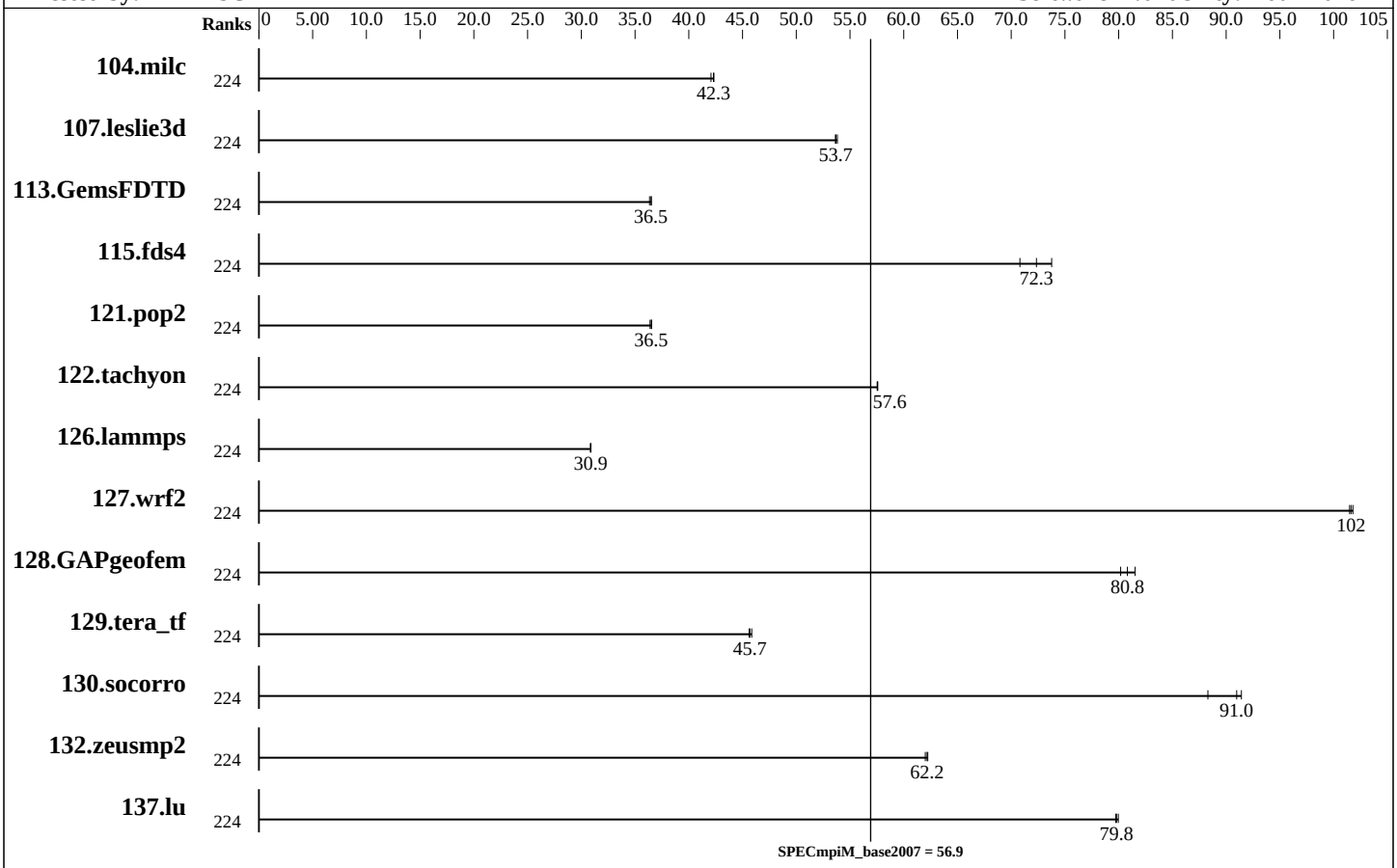
SGI ICE XA
(Intel Xeon E5-2690 v4, 2.6 GHz)

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

Continued on next page

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

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

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

Continued on next page

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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`

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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