SPEC® MPIM2007 Result

SGI

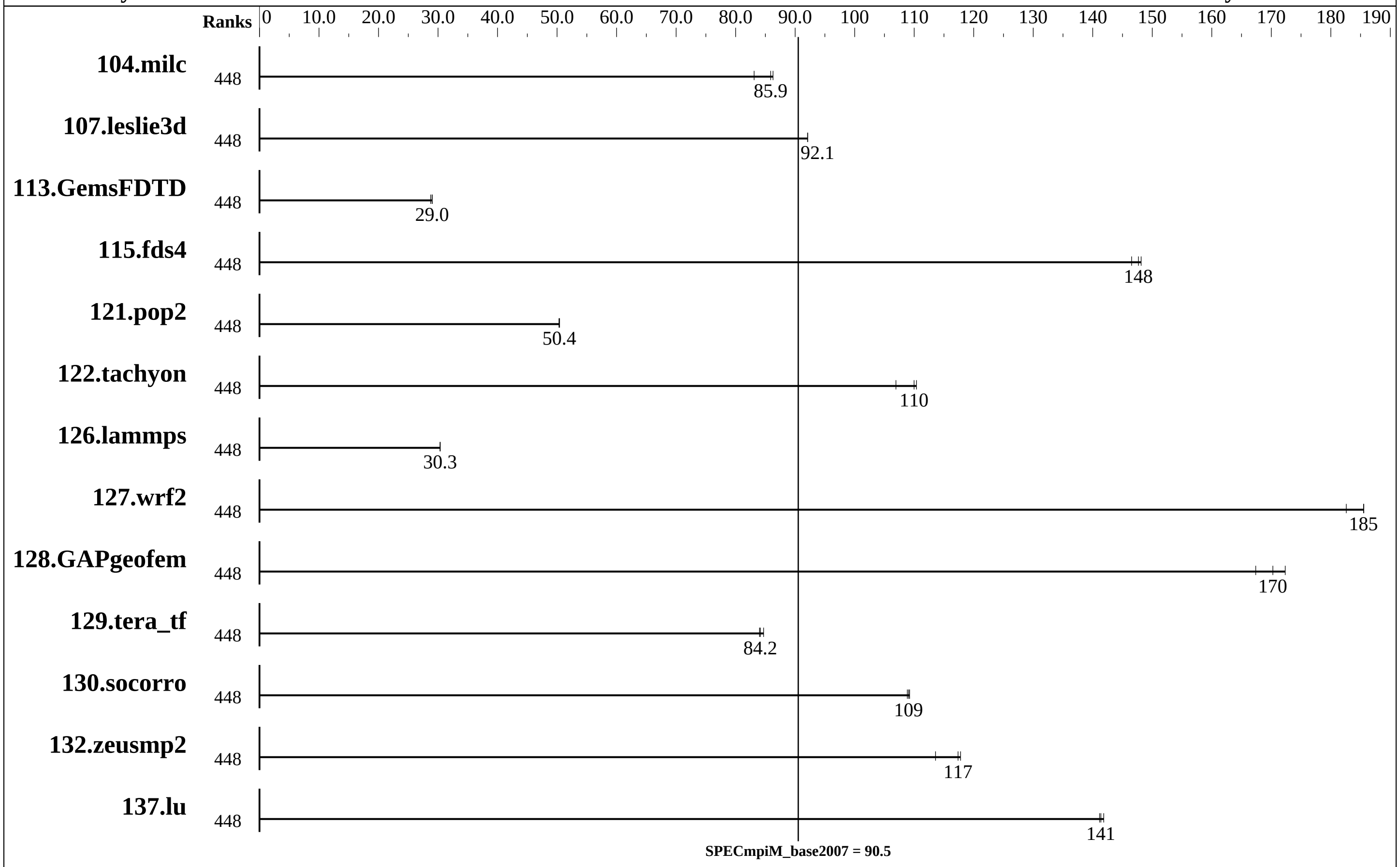
SGI ICE XA
(Intel Xeon E5-2690 v4, 2.6 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 90.5

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	448	18.8	83.1	**18.2**	**85.9**	18.1	86.3							
107.leslie3d	448	**56.7**	**92.1**	57.7	90.5	56.7	92.1							
113.GemsFDTD	448	217	29.0	219	28.8	**218**	**29.0**							
115.fds4	448	**13.2**	**148**	13.3	147	13.2	148							
121.pop2	448	82.0	50.3	**81.9**	**50.4**	81.9	50.4							
122.tachyon	448	25.3	110	**25.4**	**110**	26.2	107							
126.lammps	448	96.1	30.3	96.0	30.4	**96.1**	**30.3**							
127.wrf2	448	42.7	183	**42.0**	**185**	42.0	186							
128.GAPgeofem	448	12.3	167	**12.1**	**170**	12.0	172							
129.tera_tf	448	32.9	84.0	32.7	84.7	**32.9**	**84.2**							

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	448	**35.0**	**109**	35.1	109	34.9	109							
132.zeusmp2	448	27.3	114	**26.4**	**117**	26.3	118							
137.lu	448	**26.0**	**141**	26.0	141	25.9	142							

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:	16
Total Chips:	32
Total Cores:	448
Total Threads:	448
Total Memory:	2 TB
Base Ranks Run:	448
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:	16
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

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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 date:**	Jun-2016
Test sponsor:	SGI	**Hardware Availability:**	May-2016
Tested by:	SGI	**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:	4
Number of Ports:	36
Data Rate:	InfiniBand 4x EDR
Firmware:	11.0350.0394
Topology:	Enhanced Hypercube

Software

Continued on next page

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

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC MPI2007 v2.0.1.
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