SPEC® MPIL2007 Result

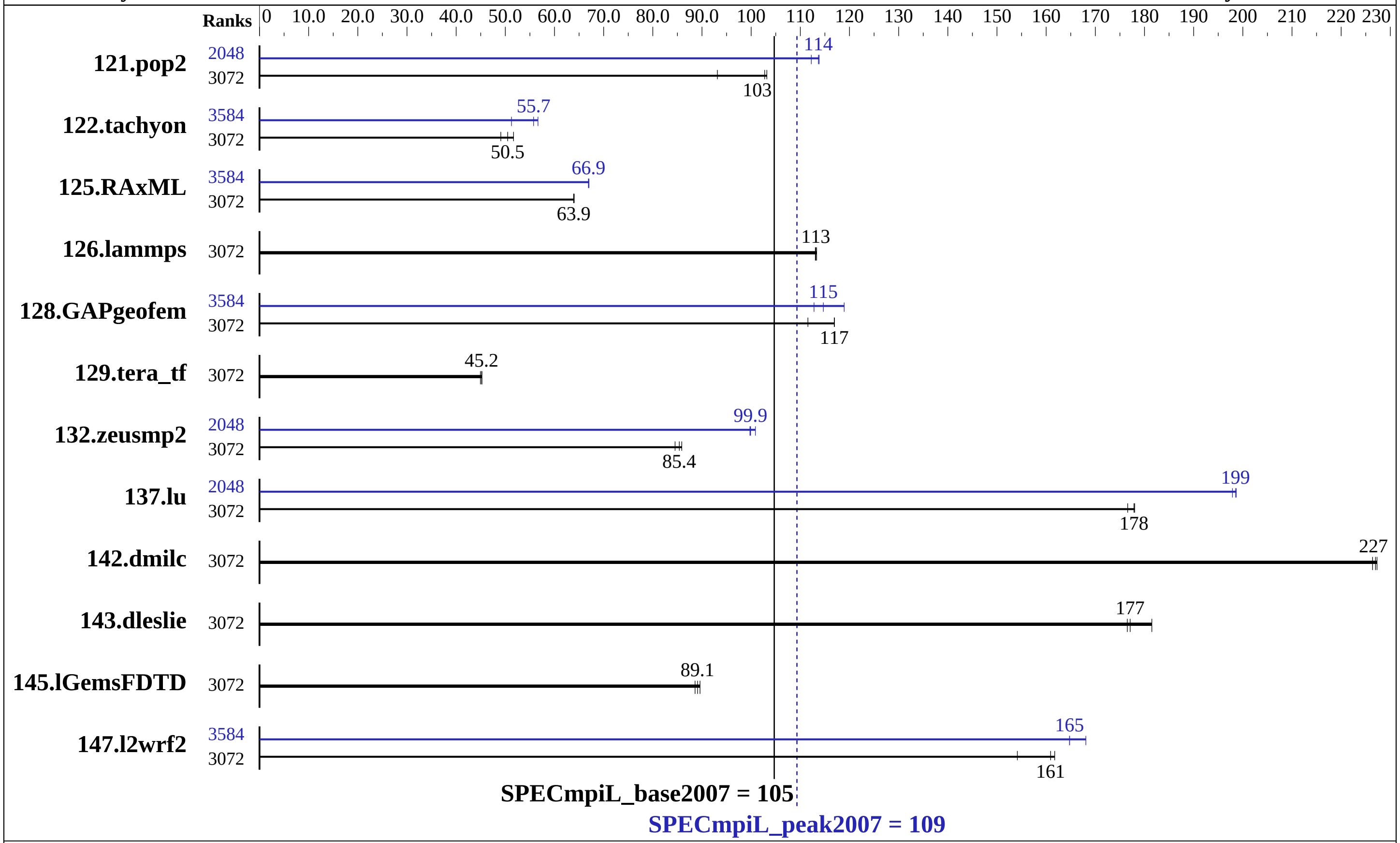
SGI

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

SPECmpiL_peak2007 = 109

SPECmpiL_base2007 = 105

MPI2007 license:	14	**Test date:**	Jun-2016
Test sponsor:	SGI	**Hardware Availability:**	May-2016
Tested by:	SGI	**Software Availability:**	Jun-2016



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
121.pop2	3072	41.8	93.1	37.7	103	**37.9**	**103**	2048	34.7	112	34.2	114	**34.2**	**114**
122.tachyon	3072	39.6	49.1	**38.5**	**50.5**	37.6	51.7	3584	37.9	51.3	**34.9**	**55.7**	34.3	56.6
125.RAxML	3072	45.7	63.9	45.6	64.0	**45.7**	**63.9**	3584	**43.6**	**66.9**	43.6	67.0	43.6	66.9
126.lammps	3072	21.7	113	21.8	113	**21.7**	**113**	3072	21.7	113	21.8	113	**21.7**	**113**
128.GAPgeofem	3072	53.2	112	50.7	117	**50.8**	**117**	3584	**51.7**	**115**	49.9	119	52.6	113
129.tera_tf	3072	24.5	44.9	24.3	45.2	**24.3**	**45.2**	3072	24.5	44.9	24.3	45.2	**24.3**	**45.2**
132.zeusmp2	3072	**24.8**	**85.4**	24.7	85.9	25.1	84.5	2048	**21.2**	**99.9**	21.3	99.8	21.0	101
137.lu	3072	23.8	177	23.6	178	**23.6**	**178**	2048	21.2	199	**21.2**	**199**	21.2	198
142.dmilc	3072	16.3	226	16.2	227	**16.2**	**227**	3072	16.3	226	16.2	227	**16.2**	**227**
143.dleslie	3072	17.6	177	17.1	181	**17.5**	**177**	3072	17.6	177	17.1	181	**17.5**	**177**
145.lGemsFDTD	3072	49.8	88.6	**49.5**	**89.1**	49.2	89.6	3072	49.8	88.6	**49.5**	**89.1**	49.2	89.6
147.l2wrf2	3072	**51.0**	**161**	53.2	154	50.7	162	3584	**49.8**	**165**	48.8	168	49.8	165

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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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:	128
Total Chips:	256
Total Cores:	3584
Total Threads:	7168
Total Memory:	16 TB
Base Ranks Run:	3072
Minimum Peak Ranks:	2048
Maximum Peak Ranks:	3584

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 11333
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:	128
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:	2
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
Data Rate:	InfiniBand 4X EDR
Ports Used:	1
Interconnect Type:	InfiniBand

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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Test sponsor:	SGI	**Hardware Availability:**	May-2016
Tested by:	SGI	**Software Availability:**	Jun-2016

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:	30
Number of Ports:	36
Data Rate:	InfiniBand 4x EDR
Firmware:	11.0350.0394
Topology:	Enhanced Hypercube
Primary Use:	MPI and I/O traffic

Software

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 enabled
  Intel Turbo Boost Technology enabled (default)
  Transparent Hugepages Enabled
Job Placement:
  Each MPI job was assigned to a topologically compact set
  of nodes.  The base run used 12 ranks per socket and peak
  runs varied between 8 and 14 ranks per socket.  The total
  number of sockets and nodes used was constant.
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.
```

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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Software Availability: Jun-2016

Portability Flags

121.pop2: -DSPEC_MPI_CASE_FLAG

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

Peak Optimization Flags

C benchmarks:

122.tachyon: -O3 -xCORE-AVX2 -no-prec-div

125.RAxML: Same as 122.tachyon

142.dmilc: basepeak = yes

C++ benchmarks:

126.lammps: basepeak = yes

Fortran benchmarks:

129.tera_tf: basepeak = yes

137.lu: -O3 -xCORE-AVX2 -no-prec-div

143.dleslie: basepeak = yes

145.lGemsFDTD: basepeak = yes

Benchmarks using both Fortran and C:
-O3 -xCORE-AVX2 -no-prec-div

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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