



SPEC[®] MPIL2007 Result

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SGI

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

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 12.5

MPI2007 license: 14

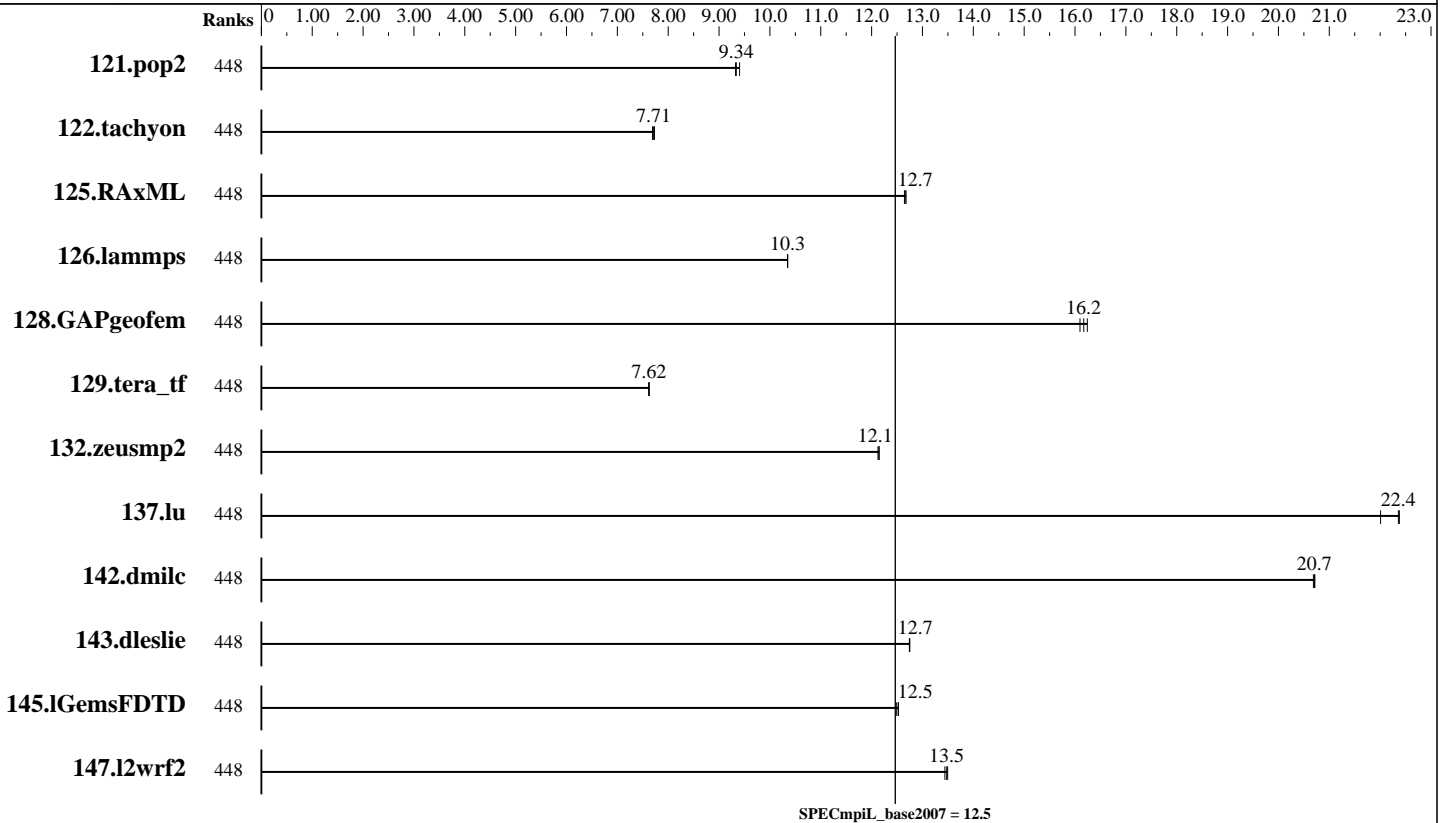
Test sponsor: SGI

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
121.pop2	448	<u>417</u>	<u>9.34</u>	417	9.32	414	9.40							
122.tachyon	448	253	7.69	252	7.73	<u>252</u>	<u>7.71</u>							
125.RAxML	448	230	12.7	231	12.6	<u>231</u>	<u>12.7</u>							
126.lammps	448	238	10.3	238	10.3	<u>238</u>	<u>10.3</u>							
128.GAPgeofem	448	365	16.2	369	16.1	<u>367</u>	<u>16.2</u>							
129.tera_tf	448	144	7.62	<u>144</u>	<u>7.62</u>	144	7.63							
132.zeusmp2	448	175	12.1	<u>175</u>	<u>12.1</u>	175	12.1							
137.lu	448	<u>188</u>	<u>22.4</u>	191	22.0	188	22.4							
142.dmilc	448	<u>178</u>	<u>20.7</u>	178	20.7	178	20.7							
143.dleslie	448	243	12.7	243	12.8	<u>243</u>	<u>12.7</u>							
145.lGemsFDTD	448	352	12.5	353	12.5	<u>352</u>	<u>12.5</u>							
147.l2wrf2	448	<u>609</u>	<u>13.5</u>	610	13.4	608	13.5							

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

Standard Performance Evaluation Corporation

info@spec.org

http://www.spec.org/



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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: 8
 Total Chips: 16
 Total Cores: 224
 Total Threads: 448
 Total Memory: 1 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: 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: 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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Hardware Availability: May-2016
Software Availability: Jun-2016

Node Description: SGI MIS Server

Hardware		Software	
Number of nodes:	1	Adapter:	Mellanox MT27500 with ConnectX-3 ASIC
Uses of the node:	fileserver	Adapter Driver:	OFED-3.2.0.1.1
Vendor:	SGI	Adapter Firmware:	2.36.5000
Model:	SGI MIS Server	Operating System:	SUSE Linux Enterprise Server 11 (x86_64), Kernel 3.0.101-0.46-default
CPU Name:	Intel Xeon E5-2670	Local File System:	xf
CPU(s) orderable:	1-2 chips	Shared File System:	--
Chips enabled:	2	System State:	Multi-user, run level 3
Cores enabled:	16	Other Software:	SGI Foundation Software 2.9, Build 711r2.sles11sp3-1411192056
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		

Interconnect Description: InfiniBand (MPI and I/O)

Hardware		Software
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	
Primary Use:	MPI and I/O traffic	



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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 with 28 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



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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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