



SPEC[®] MPIL2007 Result

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SGI

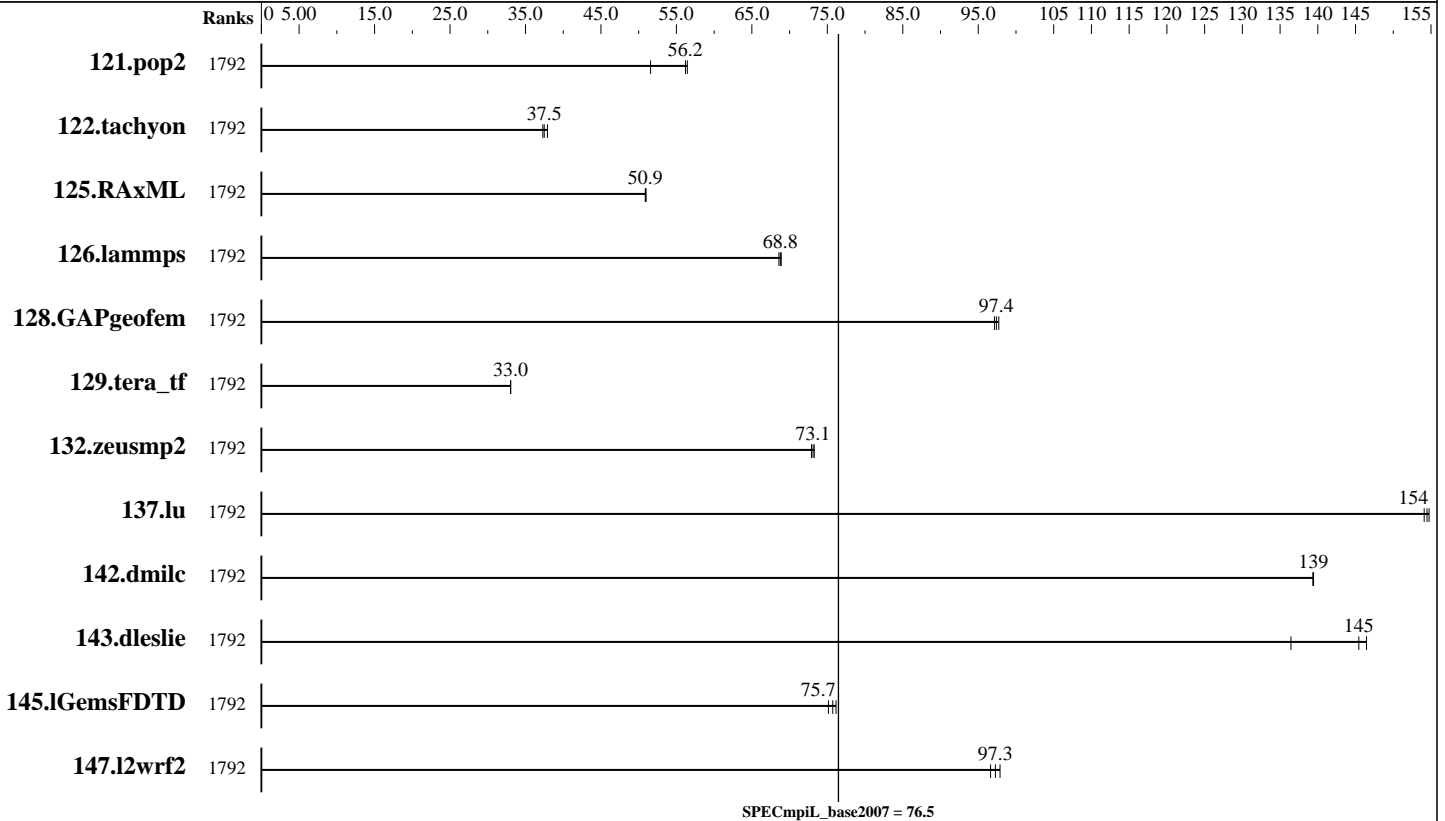
SGI ICE XA
(Intel Xeon E5-2690 v4, 2.6 GHz)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 76.5

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	1792	75.4	51.6	69.2	56.2	68.9	56.4							
122.tachyon	1792	51.9	37.5	51.3	37.9	52.1	37.3							
125.RAxML	1792	57.4	50.9	57.3	51.0	57.4	50.9							
126.lammps	1792	35.9	68.6	35.8	68.8	35.7	68.9							
128.GAPgeofem	1792	61.1	97.1	60.7	97.7	60.9	97.4							
129.tera_tf	1792	33.3	33.0	33.3	33.0	33.3	33.0							
132.zeusmp2	1792	29.1	72.9	29.0	73.1	28.9	73.3							
137.lu	1792	27.2	154	27.3	154	27.2	155							
142.dmilc	1792	26.4	139	26.4	139	26.4	139							
143.dleslie	1792	21.3	145	21.2	146	22.7	136							
145.lGemsFDTD	1792	57.9	76.2	58.3	75.7	58.7	75.1							
147.l2wrf2	1792	84.3	97.3	84.9	96.6	83.8	97.9							

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

Standard Performance Evaluation Corporation

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Hardware Summary

Software 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: 64
 Total Chips: 128
 Total Cores: 1792
 Total Threads: 3584
 Total Memory: 8 TB
 Base Ranks Run: 1792
 Minimum Peak Ranks: --
 Maximum Peak Ranks: --

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

Software

Number of nodes: 64
 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

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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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:	16	
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 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



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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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