SPEC® MPIL2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

SGI

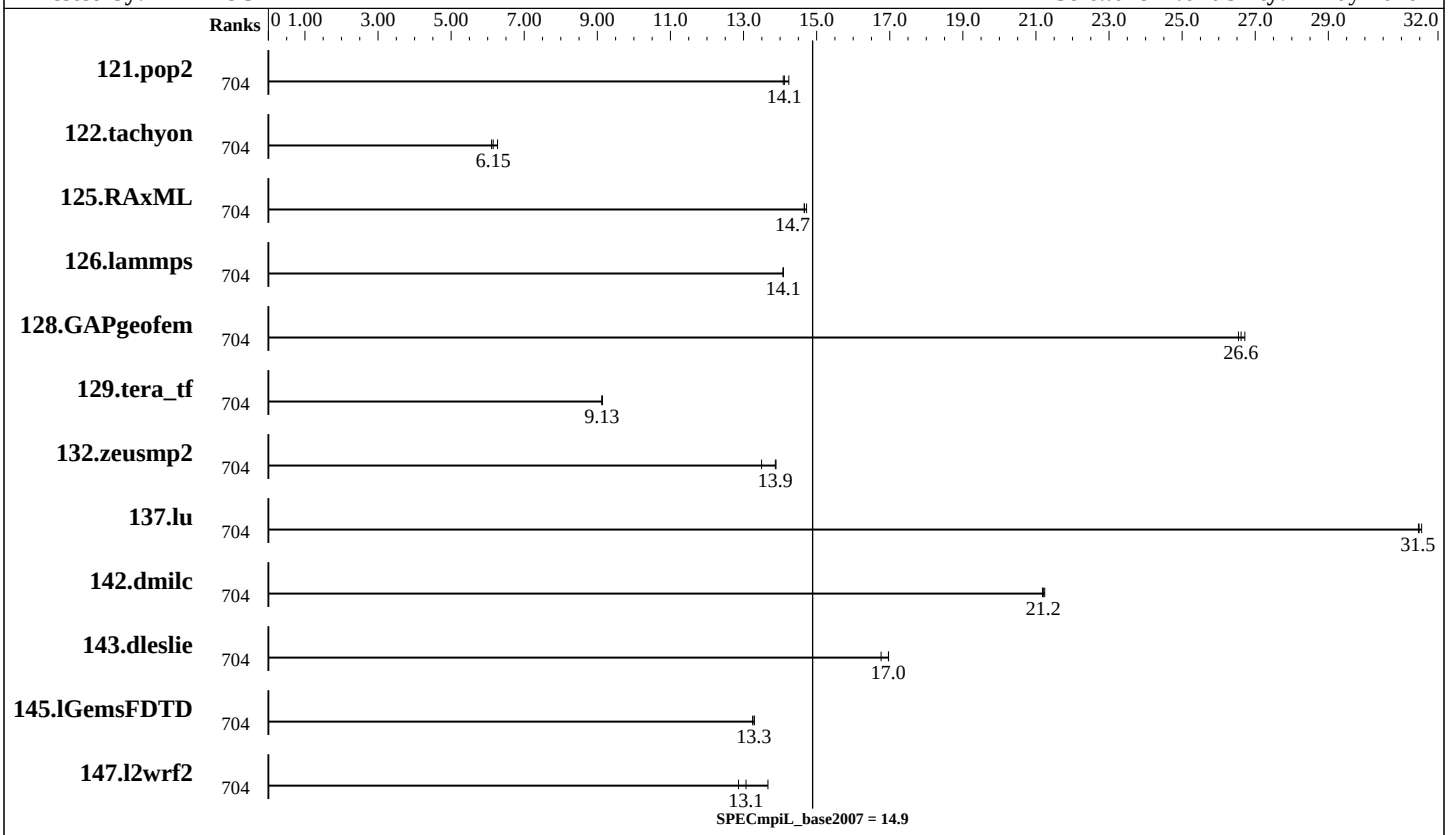
SGI Rackable C2112-4GP3
(Intel Xeon E5-2699 v4, 2.20 GHz)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 14.9

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

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



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
121.pop2	704	273	14.2	276	14.1	**276**	**14.1**							
122.tachyon	704	318	6.11	310	6.27	**316**	**6.15**							
125.RAxML	704	198	14.7	**199**	**14.7**	199	14.7							
126.lammps	704	**175**	**14.1**	175	14.1	175	14.1							
128.GAPgeofem	704	222	26.7	224	26.5	**223**	**26.6**							
129.tera_tf	704	**120**	**9.13**	120	9.14	120	9.12							
132.zeusmp2	704	**153**	**13.9**	153	13.9	157	13.5							
137.lu	704	**133**	**31.5**	133	31.6	134	31.5							
142.dmilc	704	174	21.2	**174**	**21.2**	173	21.2							
143.dleslie	704	**183**	**17.0**	185	16.8	183	17.0							
145.lGemsFDTD	704	333	13.2	332	13.3	**332**	**13.3**							
147.l2wrf2	704	**628**	**13.1**	600	13.7	638	12.9							

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

SPEC MPIL2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

SGI

SGI Rackable C2112-4GP3
(Intel Xeon E5-2699 v4, 2.20 GHz)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 14.9

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

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

Hardware Summary

Type of System:	Homogeneous
Compute Node:	SGI Rackable C2112-4GP3 Compute Node
Interconnects:	InfiniBand MPI InfiniBand I/O
File Server Node:	SGI MIS Server
Total Compute Nodes:	8
Total Chips:	16
Total Cores:	352
Total Threads:	704
Total Memory:	1 TB
Base Ranks Run:	704
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--

Software Summary

C Compiler:	Intel C++ Composer XE 2013 for Linux, Version 14.0.3.174 Build 20140422
C++ Compiler:	Intel C++ Composer XE 2013 for Linux, Version 14.0.3.174 Build 20140422
Fortran Compiler:	Intel Fortran Composer XE 2013 for Linux, Version 14.0.3.174 Build 20140422
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
MPI Library:	SGI MPT 2.14
Other MPI Info:	MLNX_OFED_LINUX-3.1-1.0.3
Pre-processors:	None
Other Software:	None

Node Description: SGI Rackable C2112-4GP3 Compute Node

Hardware

Number of nodes:	8
Uses of the node:	compute
Vendor:	SGI
Model:	SGI Rackable C2112-4GP3 (Intel Xeon E5-2699 v4, 2.20 GHz)
CPU Name:	Intel Xeon E5-2699 v4
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	44
Cores per chip:	22
Threads per core:	2
CPU Characteristics:	22 Core, 2.20 GHz, 9.6 GT/s QPI Intel Turbo Boost Technology up to 3.60 GHz Hyper-Threading Technology enabled
CPU MHz:	2220
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	55 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 MT27620 with ConnectX-4 (PCIe x16 Gen3 8 GT/s)
Number of Adapters:	1
Slot Type:	PCIe x16 Gen3
Data Rate:	InfiniBand 4x EDR
Ports Used:	1
Interconnect Type:	InfiniBand
Adapter:	Mellanox MT27500 with ConnectX-3 (PCIe x8 Gen3 8 GT/s)
Number of Adapters:	1
Slot Type:	PCIe x8 Gen3
Data Rate:	InfiniBand 4x FDR

Continued on next page

Software

Adapter:	Mellanox MT27620 with ConnectX-4 (PCIe x16 Gen3 8 GT/s)
Adapter Driver:	OFED-3.1.1-0.3
Adapter Firmware:	12.12.1240
Adapter:	Mellanox MT27500 with ConnectX-3 (PCIe x8 Gen3 8 GT/s)
Adapter Driver:	OFED-3.1.1-0.0
Adapter Firmware:	2.35.5100
Operating System:	SUSE Linux Enterprise Server 12 (x86_64), Kernel 3.12.44-52.10-default
Local File System:	ext3
Shared File System:	NFSv3 IPoIB
System State:	Multi-user, run level 3
Other Software:	SGI Tempo Service Node 3.2.0, Build 713r26.sles12-1510192000

Node Description: SGI Rackable C2112-4GP3 Compute Node

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 (Intel Xeon X2670, 2.60 GHz)
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:	2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.30 GHz Hyper-Threading Technology enabled
CPU MHz:	2601
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 (8 * 16 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem:	45 TB RAID 6 12 x 1 TB SATA (Seagate Constellation, 7200RPM)
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:	MLNX_OFED_LINUX-3.1-1.0.3
Adapter Firmware:	2.35.5100
Operating System:	SUSE Linux Enterprise Server 11 SP3 (x86_64), Kernel 3.0.101-0.46-default
Local File System:	xfs
Shared File System:	--
System State:	Multi-user, run level 5
Other Software:	SGI Foundation Software 2.10 Build 710r16.sles11sp3-1404092103

Interconnect Description: InfiniBand MPI

Hardware

Vendor:	Mellanox Technologies
Model:	None
Switch Model:	Mellanox SB7790
Number of Switches:	6
Number of Ports:	36
Data Rate:	InfiniBand 4x EDR
Firmware:	11.1.102
Topology:	Fat Tree
Primary Use:	MPI traffic

Software

Interconnect Description: InfiniBand I/O

Hardware

Vendor:	Mellanox Technologies
Model:	None
Switch Model:	Mellanox MSX6036F-1SFS
Number of Switches:	2
Number of Ports:	36
Data Rate:	InfiniBand 4x FDR
Firmware:	9.3.5080
Switch Model:	Mellanox MSX6025
Number of Switches:	4
Number of Ports:	36
Data Rate:	InfiniBand 4x FDR
Firmware:	9.3.6000
Topology:	Fat Tree
Primary Use:	I/O traffic

Software

Submit Notes

```
The config file option 'submit' was used.
```

General Notes

```
130.socorro (base): "nullify_ptrs" src.alt was used.

129.tera_tf (base): "add_rank_support" src.alt was used.

Software environment:
  export MPI_REQUEST_MAX=65536
  export MPI_TYPE_MAX=32768
  export MPI_IB_DEVS=1
  export MPI_CONNECTIONS_THRESHOLD=0
  export MPI_IB_UPGRADE_SENDS=50
  export MPI_IB_IMM_UPGRADE=false
  export MPI_IB_HYPER_LAZY=false
  ulimit -s unlimited

BIOS settings:
  AMI BIOS version T20151001184140
  Hyper-Threading Technology enabled
  Transparent HugePages enabled
  Intel Turbo Boost Technology enabled (default)
  Intel Turbo Boost Technology activated with
    modprobe acpi_cpufreq
    cpupower frequency-set -u 2601MHz -d 2601MHz -g performance

Job Placement:
  Each MPI job was assigned to a topologically compact set
  of nodes, i.e. the minimal needed number of leaf switches
```

Continued on next page

General Notes (Continued)

```
  was used for each job: 1 switch for up to 32 sockets, and
  2 switches for up to 64 sockets.

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 is
  restricted to the other plane.
```

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`

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`

SPEC and SPEC MPI are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC MPI2007 v2.0.1.
Report generated on Thu Mar 31 11:05:51 2016 by SPEC MPI2007 PS/PDF formatter v1463.
Originally published on 31 March 2016.