SPEC® MPIL2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

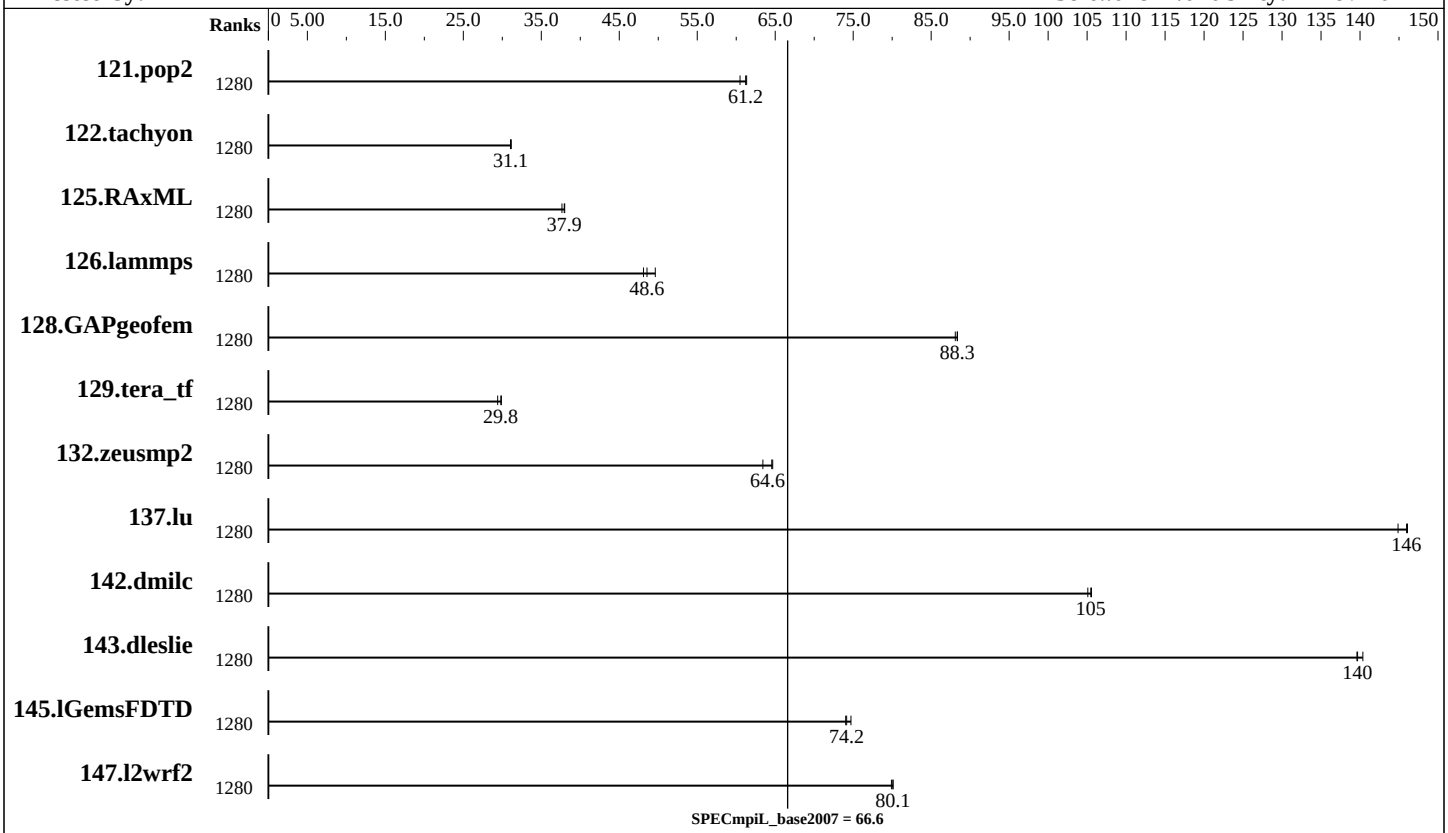
SGI 8600
(Intel Xeon Gold 6148, 2.40 GHz)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 66.6

MPI2007 license: 1
Test sponsor: HPE
Tested by: HPE

Test date: Oct-2017
Hardware Availability: Jul-2017
Software Availability: Nov-2017



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
121.pop2	1280	64.3	60.5	63.4	61.3	**63.6**	**61.2**							
122.tachyon	1280	**62.6**	**31.1**	62.4	31.1	62.6	31.1							
125.RAxML	1280	77.5	37.7	76.8	38.0	**76.9**	**37.9**							
126.lammps	1280	49.6	49.6	51.1	48.1	**50.6**	**48.6**							
128.GAPgeofem	1280	**67.2**	**88.3**	67.4	88.1	67.1	88.4							
129.tera_tf	1280	37.4	29.4	36.8	29.9	**36.9**	**29.8**							
132.zeusmp2	1280	33.4	63.4	**32.8**	**64.6**	32.8	64.7							
137.lu	1280	**28.8**	**146**	28.8	146	29.0	145							
142.dmilc	1280	**34.9**	**105**	35.1	105	34.9	106							
143.dleslie	1280	**22.2**	**140**	22.1	140	22.2	140							
145.lGemsFDTD	1280	**59.5**	**74.2**	59.6	74.0	59.0	74.7							
147.l2wrf2	1280	103	79.9	**102**	**80.1**	102	80.1							

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

Hewlett Packard Enterprise

SGI 8600
(Intel Xeon Gold 6148, 2.40 GHz)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 66.6

MPI2007 license: 1
Test sponsor: HPE
Tested by: HPE

Test date: Oct-2017
Hardware Availability: Jul-2017
Software Availability: Nov-2017

Hardware Summary

Type of System:	Homogeneous
Compute Node:	HPE XA730i Gen10 Server Node
Interconnect:	InfiniBand (MPI and I/O)
File Server Node:	Lustre FS
Total Compute Nodes:	32
Total Chips:	64
Total Cores:	1280
Total Threads:	2560
Total Memory:	6 TB
Base Ranks Run:	1280
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--

Software Summary

C Compiler:	Intel C Composer XE for Linux, Version 18.0.0.128 Build 20170811
C++ Compiler:	Intel C++ Composer XE for Linux, Version 18.0.0.128 Build 20170811
Fortran Compiler:	Intel Fortran Composer XE for Linux, Version 18.0.0.128 Build 20170811
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
MPI Library:	HPE Performance Software - Message Passing Interface 2.17
Other MPI Info:	OFED 3.2.2
Pre-processors:	None
Other Software:	None

Node Description: HPE XA730i Gen10 Server Node

Hardware

Number of nodes:	32
Uses of the node:	compute
Vendor:	Hewlett Packard Enterprise
Model:	SGI 8600 (Intel Xeon Gold 6148, 2.40 GHz)
CPU Name:	Intel Xeon Gold 6148
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	40
Cores per chip:	20
Threads per core:	2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz:	2400
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	27.5 MB I+D on chip per chip
Other Cache:	None
Memory:	192 GB (12 x 16 GB 2Rx4 PC4-2666V-R)
Disk Subsystem:	None
Other Hardware:	None
Adapter:	Mellanox MT27700 with ConnectX-4 ASIC
Number of Adapters:	2
Slot Type:	PCIe x16 Gen3 8GT/s
Data Rate:	InfiniBand 4X EDR
Ports Used:	1
Interconnect Type:	InfiniBand

Software

Adapter:	Mellanox MT27700 with ConnectX-4 ASIC
Adapter Driver:	OFED-3.4-2.1.8.0
Adapter Firmware:	12.18.1000
Operating System:	Red Hat Enterprise Linux Server 7.3 (Maipo), Kernel 3.10.0-514.2.2.el7.x86_64
Local File System:	LFS
Shared File System:	LFS
System State:	Multi-user, run level 3
Other Software:	SGI Management Center Compute Node 3.5.0, Build 716r171.rhel73-1705051353

Node Description: Lustre FS

Hardware

Number of nodes:	4
Uses of the node:	fileserver

Continued on next page

Software

Adapter:	Mellanox MT27700 with ConnectX-4 ASIC
Adapter Driver:	OFED-3.3-1.0.0.0

Continued on next page

Copyright 2006-2010 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

SGI 8600
(Intel Xeon Gold 6148, 2.40 GHz)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 66.6

MPI2007 license: 1
Test sponsor: HPE
Tested by: HPE

Test date: Oct-2017
Hardware Availability: Jul-2017
Software Availability: Nov-2017

Node Description: Lustre FS

Vendor:	Hewlett Packard Enterprise
Model:	Rackable C1104-GP2 (Intel Xeon E5-2690 v3, 2.60 GHz)
CPU Name:	Intel Xeon E5-2690 v3
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	24
Cores per chip:	12
Threads per core:	1
CPU Characteristics:	Intel Turbo Boost Technology up to 3.50 GHz Hyper-Threading Technology disabled
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:	30 MB I+D on chip per chip
Other Cache:	None
Memory:	128 GB (8 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem:	684 TB RAID 6 48 x 8+2 2TB 7200 RPM
Other Hardware:	None
Adapter:	Mellanox MT27700 with ConnectX-4 ASIC
Number of Adapters:	2
Slot Type:	PCIe x16 Gen3
Data Rate:	InfiniBand 4X EDR
Ports Used:	1
Interconnect Type:	InfiniBand

Adapter Firmware:	12.14.2036
Operating System:	Red Hat Enterprise Linux Server 7.3 (Maipo), Kernel 3.10.0-514.2.2.el7.x86_64
Local File System:	ext3
Shared File System:	LFS
System State:	Multi-user, run level 3
Other Software:	None

Interconnect Description: InfiniBand (MPI and I/O)

Hardware

Vendor:	Mellanox Technologies and SGI
Model:	SGI P0002145
Switch Model:	SGI P0002145
Number of Switches:	4
Number of Ports:	36
Data Rate:	InfiniBand 4X EDR
Firmware:	11.0350.0394
Topology:	Enhanced Hypercube
Primary Use:	MPI and I/O traffic

Software

Base Tuning Notes

```
src.alt used: 143.dleslie->integer_overflow
```

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_IMM_UPGRADE=false
  export MPI_IB_DCIS=2
  export MPI_IB_HYPER_LAZY=false
  export MPI_CONNECTIONS_THRESHOLD=0
  ulimit -s unlimited

BIOS settings:
  AMI BIOS version SAED7177, 07/17/2017

Job Placement:
  Each MPI job was assigned to a topologically compact set
  of nodes.

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`

Base Optimization Flags

C benchmarks:
`-O3 -xCORE-AVX512 -no-prec-div -ipo`

C++ benchmarks:

126.lammps: `-O3 -xCORE-AVX512 -no-prec-div -ansi-alias -ipo`

Fortran benchmarks:
`-O3 -xCORE-AVX512 -no-prec-div -ipo`

Benchmarks using both Fortran and C:
`-O3 -xCORE-AVX512 -no-prec-div -ipo`

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/HPE_x86_64_Intel18_flags.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/mpi2007/flags/HPE_x86_64_Intel18_flags.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 Wed Oct 25 17:12:06 2017 by SPEC MPI2007 PS/PDF formatter v1463.
Originally published on 25 October 2017.