



SPEC® MPIL2007 Result

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Hewlett Packard Enterprise

SPECmpiL_peak2007 = Not Run

SGI 8600
(Intel Xeon Gold 6148, 2.40 GHz)

SPECmpiL_base2007 = 9.53

MPI2007 license: 1

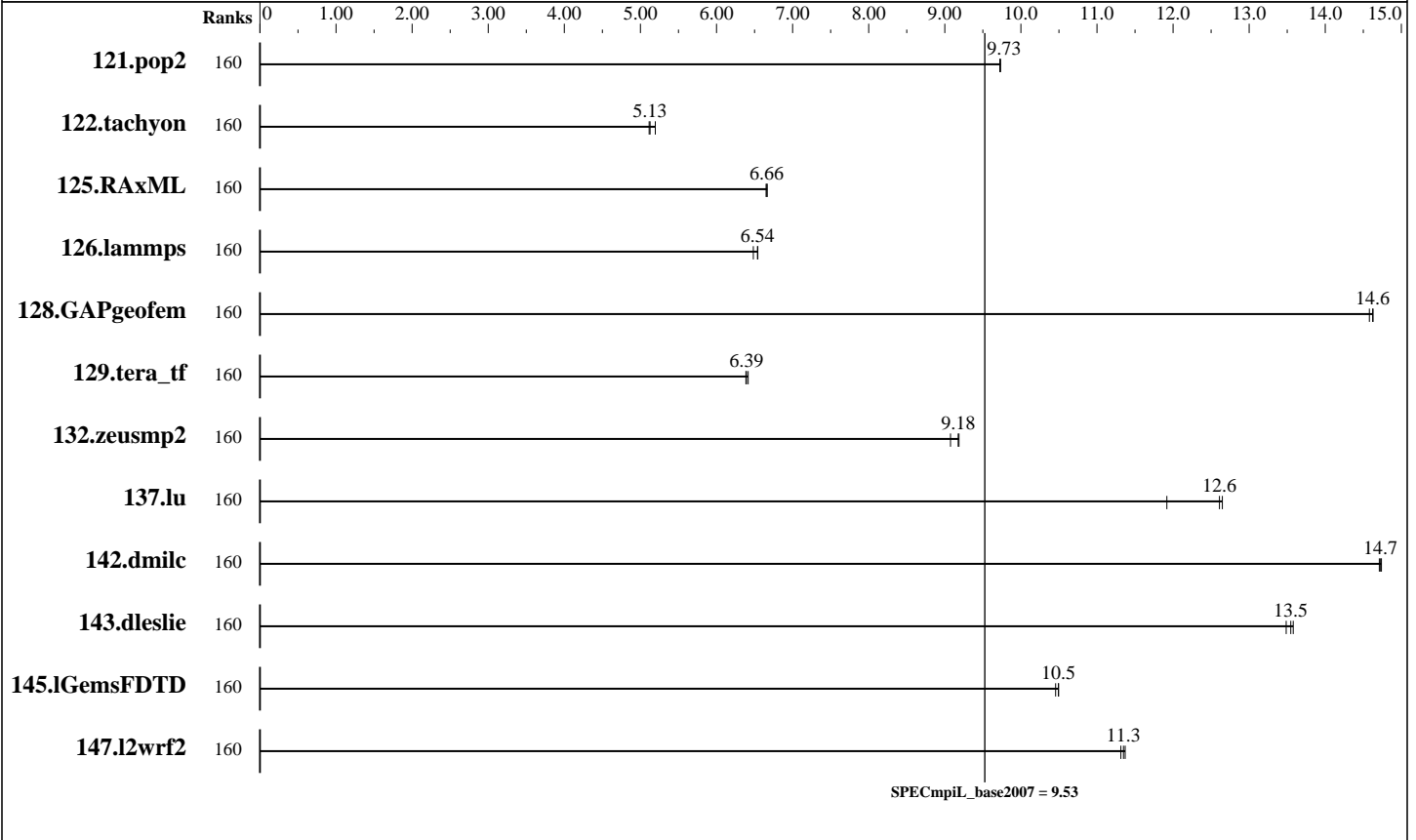
Test sponsor: HPE

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	160	400	9.72	400	9.73	400	9.73							
122.tachyon	160	379	5.13	374	5.20	380	5.11							
125.RAxML	160	438	6.66	438	6.67	439	6.65							
126.lammps	160	376	6.54	379	6.48	376	6.54							
128.GAPgeofem	160	407	14.6	406	14.6	406	14.6							
129.tera_tf	160	171	6.42	172	6.39	172	6.39							
132.zeusmp2	160	231	9.19	234	9.08	231	9.18							
137.lu	160	333	12.6	332	12.6	353	11.9							
142.dmilc	160	250	14.7	250	14.7	250	14.7							
143.dleslie	160	229	13.5	230	13.5	228	13.6							
145.lGemsFDTD	160	422	10.5	420	10.5	420	10.5							
147.l2wrf2	160	723	11.3	725	11.3	722	11.4							

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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http://www.spec.org/



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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: 4
Total Chips: 8
Total Cores: 160
Total Threads: 320
Total Memory: 768 GB
Base Ranks Run: 160
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: 4
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

Software

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

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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: 1
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



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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_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



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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

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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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