### SPECmpiM_base2007 = 26.5

**Hewlett Packard Enterprise**

SGI 8600
(Intel Xeon Gold 6148, 2.40 GHz)

**MPI2007 license:** 1
**Test sponsor:** HPE
**Tested by:** HPE
**Test date:** Oct-2017
**Hardware Availability:** Jul-2017
**Software Availability:** Nov-2017

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
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<tr>
<td>104.milc</td>
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<td>95.6</td>
<td>16.4</td>
<td>95.6</td>
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<tr>
<td>107.leslie3d</td>
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<td>217</td>
<td>24.0</td>
<td>219</td>
<td>23.8</td>
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<tr>
<td>113.GemsFDTD</td>
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<td>193</td>
<td>32.7</td>
<td>190</td>
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<tr>
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<td>22.6</td>
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<td>126.lammps</td>
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<td>19.2</td>
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<td>117</td>
<td>23.7</td>
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<td>23.7</td>
</tr>
</tbody>
</table>

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.
Hewlett Packard Enterprise

SGI 8600
(Intel Xeon Gold 6148, 2.40 GHz)

SPECmpiM_peak2007 = Not Run
SPECmpiM_base2007 = 26.5

Results Table (Continued)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Ratio</th>
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<tbody>
<tr>
<td>Base</td>
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<td>113</td>
<td>32.6</td>
<td>114</td>
<td>32.3</td>
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<td></td>
</tr>
</tbody>
</table>

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: 2
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

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
Hewlett Packard Enterprise

SGI 8600
(Intel Xeon Gold 6148, 2.40 GHz)

SPECmpI_base2007 = 26.5

Node Description: HPE XA730i Gen10 Server Node

- Ports Used: 1
- Interconnect Type: InfiniBand

Node Description: Lustre FS

- Number of nodes: 4
- Uses of the node: filesaver
- 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
- 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

Interconnect Description: InfiniBand (MPI and I/O)

- 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

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Hewlett Packard Enterprise

SGI 8600
(Intel Xeon Gold 6148, 2.40 GHz)

SPECmpiM_peak2007 = Not Run
SPECmpiM_base2007 = 26.5

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

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

Interconnect Description: InfiniBand (MPI and I/O)

Primary Use: MPI and I/O traffic

Base Tuning Notes

crc.alt used: 129.tera_tf->add_rank_support
crc.alt used: 130.socorro->nullify_ptrs

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_CONNECTIONS_THRESHOLD=0
  export MPI_IB_DCIS=2
  export MPI_IB_HYPER_LAZY=false
  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:

Continued on next page
SPEC MPIM2007 Result

Hewlett Packard Enterprise

SGI 8600
(Intel Xeon Gold 6148, 2.40 GHz)

SPECmpim_base2007 = 26.5
SPECmpim_peak2007 = Not Run

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

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

Base Compiler Invocation (Continued)

126.lammps: icpc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
icc ifort

Base Portability Flags

121.pop2: -DSPEC_MPI_CASE_FLAG
127.wrf2: -DSPEC_MPI_CASE_FLAG -DSPEC_MPI_LINUX
130.socorro: -assume nostd_intent_in

Base Optimization Flags

C benchmarks:
-03 -xCORE-AVX512 -no-prec-div -ipo

C++ benchmarks:
126.lammps: -03 -xCORE-AVX512 -no-prec-div -ansi-alias -ipo

Fortran benchmarks:
-03 -xCORE-AVX512 -no-prec-div -ipo

Benchmarks using both Fortran and C:
-03 -xCORE-AVX512 -no-prec-div -ipo

Base Other Flags

C benchmarks:
-1mpi

C++ benchmarks:
126.lammps: -1mpi

Fortran benchmarks:
-1mpi

Benchmarks using both Fortran and C:
-1mpi
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SGI 8600
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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.