Hewlett Packard Enterprise

SGI 8600
(Intel Xeon Gold 6148, 2.40 GHz)

SPECmpiM_peak2007 = Not Run
SPECmpiM_base2007 = 78.0

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

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
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</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

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(Intel Xeon Gold 6148, 2.40 GHz)

SPECmpiM_peak2007 = Not Run
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Results Table (Continued)

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<td><strong>133</strong></td>
<td>27.5</td>
<td>134</td>
<td>27.8</td>
<td>132</td>
</tr>
</tbody>
</table>

Hardware Summary

Type of System: Homogeneous
Compute Node: HPE XA730i Gen10 Server Node
Interconnect: InfiniBand (MPI and I/O)
File Server Node: Lustre FS

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
MP 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: 8
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

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

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SPEC MPIM2007 Result

Hewlett Packard Enterprise

SGI 8600
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Hewlett Packard Enterprise

Sponsor: HPE
Hardware Availability: Jul-2017
Software Availability: Nov-2017

Hardware Availability: Jul-2017
Software Availability: Nov-2017

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: fileserver
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

Software

Adapter Driver: OFED-3.3-1.0.0.0
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)

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
SPEC MPIM2007 Result

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MPI2007 license: 1
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Interconnect Description: InfiniBand (MPI and I/O)

Primary Use: MPI and I/O traffic

Base Tuning Notes

src.alt used: 129.tera_tf->add_rank_support
src.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:

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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:
   -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
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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.