SPEC® MPIM2007 Result

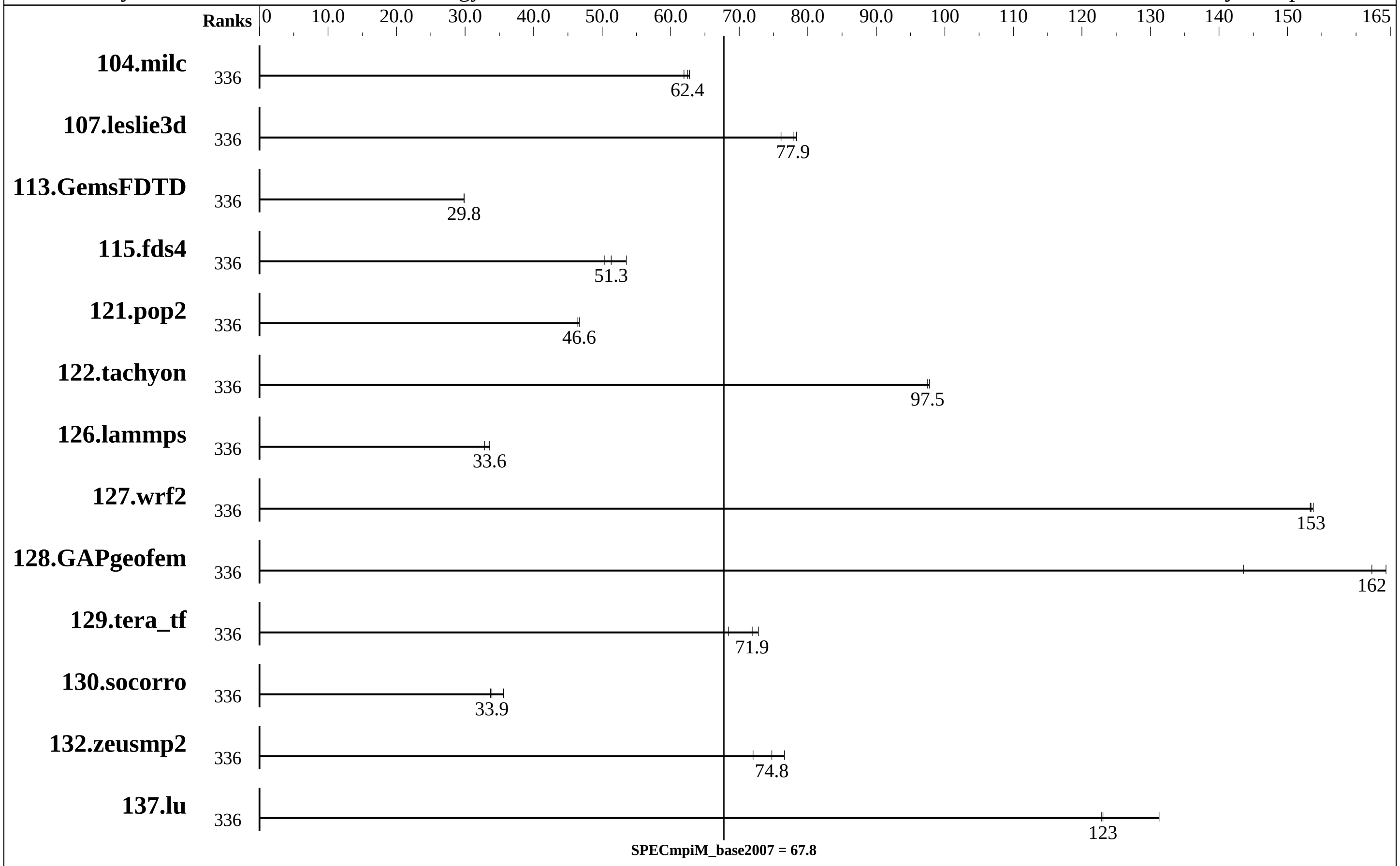
Lenovo Global Technology

ThinkSystem SR650
(Intel Xeon Platinum 8280 CPU, 2.70 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 67.8

MPI2007 license: 28		**Test date:**	Mar-2019
Test sponsor:	Lenovo Global Technology	**Hardware Availability:**	Apr-2019
Tested by:	Lenovo Global Technology	**Software Availability:**	Apr-2019



Results Table

	Base							Peak						
Benchmark	**Ranks**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Ranks**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
104.milc	336	24.9	62.8	**25.1**	**62.4**	25.3	61.9							
107.leslie3d	336	66.6	78.3	**67.0**	**77.9**	68.6	76.1							
113.GemsFDTD	336	**211**	**29.8**	211	29.9	211	29.8							
115.fds4	336	38.8	50.3	**38.0**	**51.3**	36.5	53.5							
121.pop2	336	88.5	46.7	88.9	46.4	**88.5**	**46.6**							
122.tachyon	336	28.7	97.4	**28.7**	**97.5**	28.6	97.7							
126.lammps	336	86.7	33.6	**86.8**	**33.6**	88.7	32.9							
127.wrf2	336	50.7	154	50.9	153	**50.8**	**153**							
128.GAPgeofem	336	14.4	144	**12.7**	**162**	12.6	164							
129.tera_tf	336	38.0	72.8	40.4	68.5	**38.5**	**71.9**							

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

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Test sponsor:	Lenovo Global Technology	**Hardware Availability:**	Apr-2019
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Results Table (Continued)

	Base							Peak						
Benchmark	**Ranks**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Ranks**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
130.socorro	336	113	33.7	107	35.6	**113**	**33.9**							
132.zeusmp2	336	**41.5**	**74.8**	43.1	72.0	40.5	76.6							
137.lu	336	**29.9**	**123**	28.0	131	29.9	123							

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

Hardware Summary

Type of System:	Homogeneous
Compute Node:	ThinkSystem SR650
Interconnect:	Intel Omni-Path
File Server Node:	NFS
Total Compute Nodes:	6
Total Chips:	12
Total Cores:	336
Total Threads:	336
Total Memory:	4608 GB
Base Ranks Run:	336
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--

Software Summary

C Compiler:	Intel C++ Compiler 17.0 Update 7 for Linux Version 17.0.7 Build 20180403
C++ Compiler:	Intel C++ Compiler 17.0 Update 7 for Linux Version 17.0.7 Build 20180403
Fortran Compiler:	Intel Fortran Compiler 17.0 Update 7 for Linux Version 17.0.7 Build 20180403
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
MPI Library:	Intel MPI Library for Linux* OS Version 2018 Update 3 Build 20180411
Other MPI Info:	None
Pre-processors:	No
Other Software:	None

Node Description: ThinkSystem SR650

Hardware

Number of nodes:	6
Uses of the node:	compute
Vendor:	Lenovo Global Technology
Model:	SR650
CPU Name:	Intel Xeon Platinum 8280
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	56
Cores per chip:	28
Threads per core:	1
CPU Characteristics:	None
CPU MHz:	2700
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	38.5 MB I+D on chip per chip
Other Cache:	None
Memory:	768 GB (24 x 32 GB 2Rx4 PC4-2933Y-R)
Disk Subsystem:	1 x 1 TB 12 Gbps SAS 2.5" SSD (JBOD)
Other Hardware:	ThinkSystem RAID 530-8i
Adapter:	Intel Omni-Path 100 Series Single-port PCIe 3.0 x16 HFA
Number of Adapters:	1
Slot Type:	PCI-Express Gen3 x16
Data Rate:	100 Gb/s

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Software

Adapter:	Intel Omni-Path 100 Series Single-port PCIe 3.0 x16 HFA
Adapter Driver:	IFS 10.9.1.0.15
Adapter Firmware:	10.9.0.1.0
Operating System:	Red Hat Enterprise Linux Server release 7.6, Kernel 3.10.0-957.el7.x86_64
Local File System:	xfs
Shared File System:	nfs
System State:	Multi-user, run level 3
Other Software:	NONE

Node Description: ThinkSystem SR650

Ports Used:	1
Interconnect Type:	Intel Omni-Path Fabric 100 Series

Node Description: NFS

Hardware

Number of nodes:	1
Uses of the node:	Fileserver
Vendor:	Lenovo Global Technology
Model:	ThinkSystem SR650
CPU Name:	Intel Xeon Platinum 8280
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	56
Cores per chip:	28
Threads per core:	1
CPU Characteristics:	None
CPU MHz:	2700
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	38.5 MB I+D on chip per chip
Other Cache:	None
Memory:	768 GB (24 x 32 GB 2Rx4 PC4-2933Y-R)
Disk Subsystem:	1 x 1 TB 12 Gbps SAS 2.5" SSD (JBOD)
Other Hardware:	None
Adapter:	Intel Omni-Path 100 Series Single-port PCIe 3.0 x16 HFA
Number of Adapters:	1
Slot Type:	PCI-Express 3.0 x16
Data Rate:	100 Gb/s
Ports Used:	1
Interconnect Type:	Intel Omni-Path Fabric 100 series

Software

Adapter:	Intel Omni-Path 100 Series Single-port PCIe 3.0 x16 HFA
Adapter Driver:	10.9.1.0.15
Adapter Firmware:	10.9.0.1.0
Operating System:	Red Hat Enterprise Linux Server release 7.6
Local File System:	None
Shared File System:	NFS
System State:	Multi-User, run level 3
Other Software:	None

Interconnect Description: Intel Omni-Path

Hardware

Vendor:	Intel
Model:	Intel Omni-Path Fabric 100 Series
Switch Model:	Intel Omni-Path Edge Switch 100 Series 48 Port 2 PSU
Number of Switches:	1
Number of Ports:	48
Data Rate:	100 Gb/s
Firmware:	10.3.0.0.60
Topology:	Mesh
Primary Use:	MPI 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.

 MPI startup command:
   mpiexec command was used to start MPI jobs.

 RAM configuration:
   Compute nodes have 2 x 32 GB RDIMM on each memory channel.

 BIOS settings:
   Operating Mode : Maximum Performance Mode
   Intel Hyper-Threading Technology (SMT): Disabled
   SNC (Sub-NUMA Cluster): Enable


 Yes: The test sponsor attests, as of date of publication,
 that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

 Yes: The test sponsor attests, as of date of publication,
 that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.

 Yes: The test sponsor attests, as of date of publication,
 that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.
```

Base Compiler Invocation

C benchmarks:
`mpiicc`

C++ benchmarks:

126.lammps: `mpiicpc`

Fortran benchmarks:
`mpiifort`

Benchmarks using both Fortran and C:
`mpiicc mpiifort`

Base Portability Flags

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

Base Optimization Flags

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

C++ benchmarks:

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

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

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

The flags files that were used to format this result can be browsed at
http://www.spec.org/mpi2007/flags/Lenovo-SPECmpiM_Platform_Flags.html
http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20170711.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/mpi2007/flags/Lenovo-SPECmpiM_Platform_Flags.xml
http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20170711.xml

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 Tue Apr 2 18:30:23 2019 by SPEC MPI2007 PS/PDF formatter v1463.
Originally published on 2 April 2019.