SPEC® MPIM2007 Result

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Lenovo Global Technology

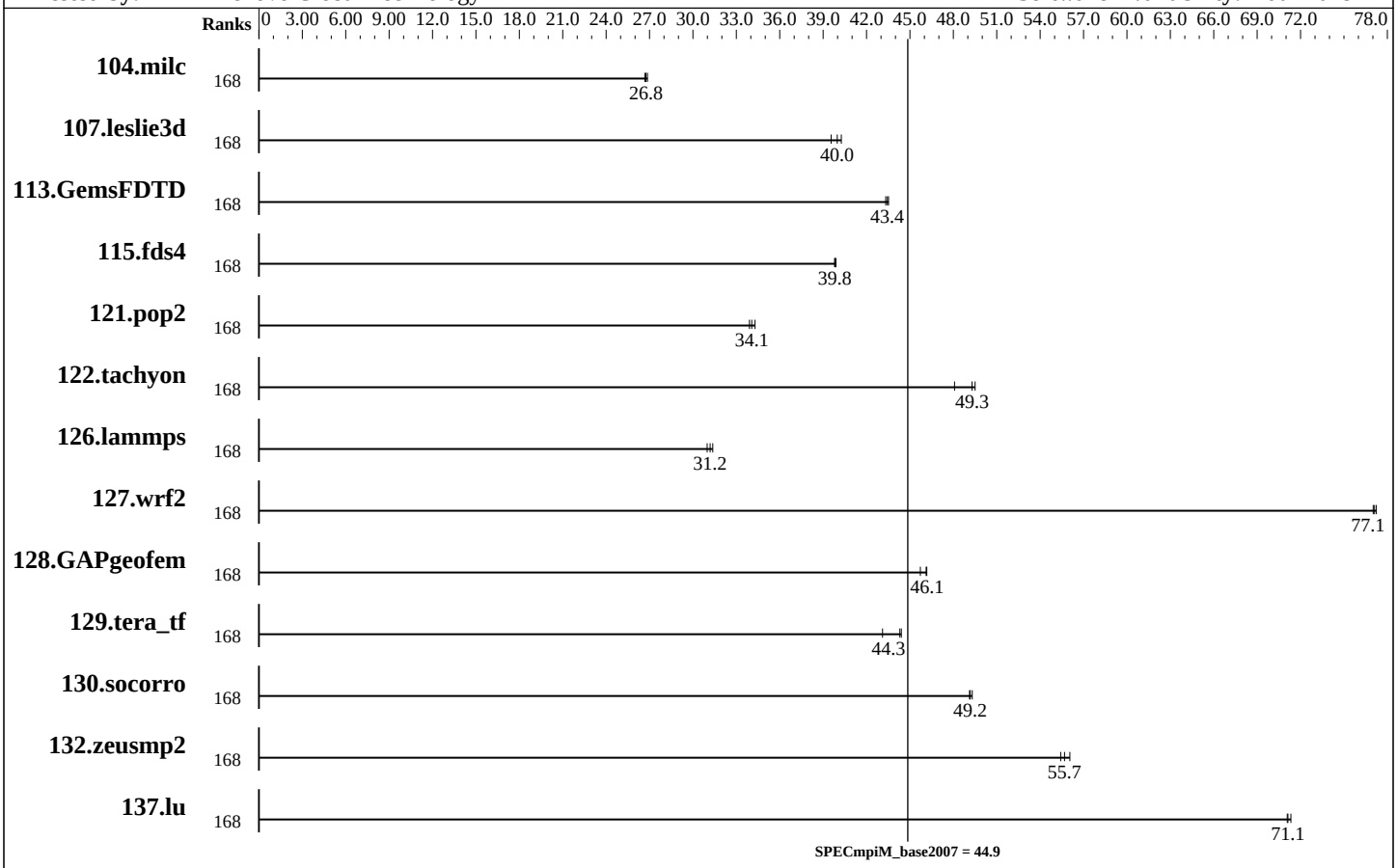
ThinkSystem SR950
(Intel Xeon Platinum 8180 CPU, 2.50 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 44.9

MPI2007 license: 28
Test sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test date: Aug-2018
Hardware Availability: Aug-2017
Software Availability: Jul-2018



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	168	58.7	26.7	58.3	26.9	**58.5**	**26.8**							
107.leslie3d	168	130	40.3	**131**	**40.0**	132	39.6							
113.GemsFDTD	168	145	43.5	**145**	**43.4**	146	43.3							
115.fds4	168	48.9	39.9	49.0	39.8	**49.0**	**39.8**							
121.pop2	168	**121**	**34.1**	122	33.9	120	34.3							
122.tachyon	168	56.5	49.5	**56.7**	**49.3**	58.2	48.1							
126.lammps	168	94.1	31.0	**93.5**	**31.2**	92.9	31.4							
127.wrf2	168	101	77.2	101	77.0	**101**	**77.1**							
128.GAPgeofem	168	44.7	46.2	45.2	45.7	**44.8**	**46.1**							
129.tera_tf	168	**62.5**	**44.3**	62.3	44.4	64.2	43.1							

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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Results Table (Continued)

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
130.socorro	168	**77.6**	**49.2**	77.4	49.3	77.7	49.1							
132.zeusmp2	168	56.0	55.4	**55.7**	**55.7**	55.4	56.1							
137.lu	168	**51.7**	**71.1**	51.5	71.3	51.7	71.1							

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 SR950
Interconnect:	N/A
Total Compute Nodes:	1
Total Chips:	6
Total Cores:	168
Total Threads:	168
Total Memory:	1152 GB
Base Ranks Run:	168
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 SR950

Hardware

Number of nodes:	1
Uses of the node:	compute
Vendor:	Lenovo Global Technology
Model:	SR950
CPU Name:	Intel Xeon Platinum 8180
CPU(s) orderable:	2,3,4,6,8 chips
Chips enabled:	6
Cores enabled:	168
Cores per chip:	28
Threads per core:	1
CPU Characteristics:	None
CPU MHz:	2500
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	39424 KB I+D on chip per chip shared / 28 cores
Other Cache:	None
Memory:	1152 GB (72 x 16GB 2Rx8 PC4-2666V)
Disk Subsystem:	960GB NVME SSD
Other Hardware:	ThinkSystem RAID 930-8i 2GB Flash
Adapter:	N/A
Number of Adapters:	0
Slot Type:	N/A
Data Rate:	N/A

Continued on next page

Software

Adapter:	N/A
Adapter Driver:	N/A
Adapter Firmware:	N/A
Operating System:	Red Hat Enterprise Linux Server release 7.3, Kernel 3.10.0-514.48.5.el7.x86_64
Local File System:	xfs
Shared File System:	None
System State:	None
Other Software:	None

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Software Availability: Jul-2018

Node Description: ThinkSystem SR950

Ports Used:	0
Interconnect Type:	None

Interconnect Description: N/A

Hardware

Vendor:	N/A
Model:	N/A
Switch Model:	N/A
Number of Switches:	0
Number of Ports:	0
Data Rate:	N/A
Firmware:	N/A
Topology:	N/A
Primary Use:	N/A

Software

Submit Notes

```
The config file option 'submit' was used.
```

General Notes

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

RAM configuration:
  Compute nodes have 2x16GB RDIMM on each memory channel.

Add "intel_idle.max_cstate=0 intel_pstate=disable" into grub

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.20180912.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.20180912.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.
Report generated on Wed Sep 12 12:24:31 2018 by SPEC MPI2007 PS/PDF formatter v1463.
Originally published on 12 September 2018.