SPEC® MPIM2007 Result

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Lenovo Global Technology

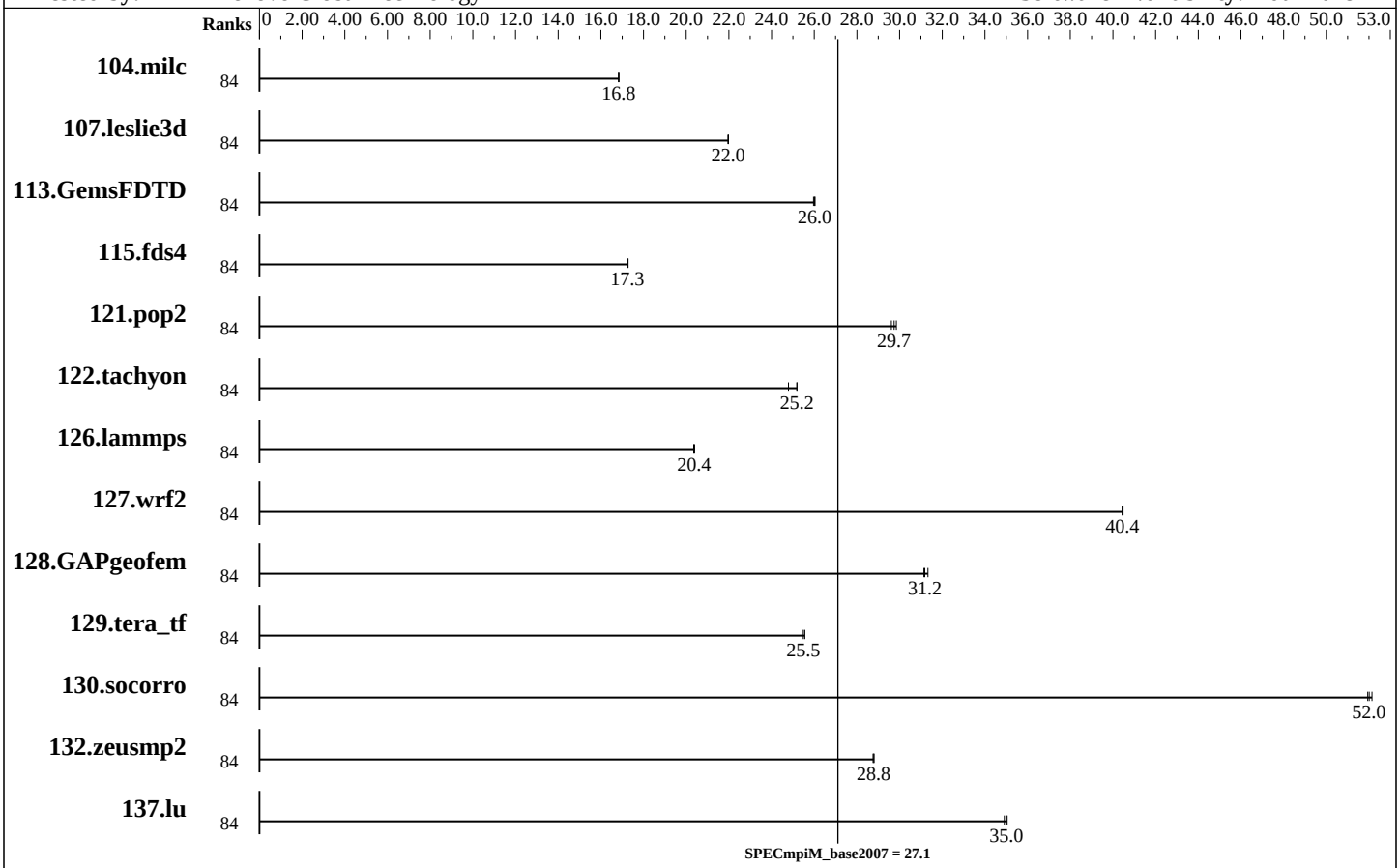
ThinkSystem SR950
(Intel Xeon Platinum 8180 CPU, 2.50 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 27.1

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	84	**92.9**	**16.8**	93.0	16.8	92.9	16.8							
107.leslie3d	84	238	22.0	**238**	**22.0**	237	22.0							
113.GemsFDTD	84	**242**	**26.0**	243	26.0	242	26.0							
115.fds4	84	113	17.2	**113**	**17.3**	113	17.3							
121.pop2	84	138	29.8	139	29.6	**139**	**29.7**							
122.tachyon	84	113	24.8	111	25.2	**111**	**25.2**							
126.lammps	84	**143**	**20.4**	143	20.4	143	20.4							
127.wrf2	84	193	40.4	193	40.5	**193**	**40.4**							
128.GAPgeofem	84	66.3	31.1	**66.2**	**31.2**	65.9	31.3							
129.tera_tf	84	108	25.6	109	25.4	**109**	**25.5**							

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	84	73.2	52.1	**73.4**	**52.0**	73.5	51.9							
132.zeusmp2	84	108	28.8	**108**	**28.8**	108	28.8							
137.lu	84	105	34.9	**105**	**35.0**	105	35.0							

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:	3
Total Cores:	84
Total Threads:	84
Total Memory:	576 GB
Base Ranks Run:	84
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:	3
Cores enabled:	84
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:	576 GB (36 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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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
http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20170711.xml

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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