



# SPEC® MPIM2007 Result

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## Lenovo Global Technology

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

SPECmpiM\_peak2007 = Not Run

SPECmpiM\_base2007 = 19.4

MPI2007 license: 28

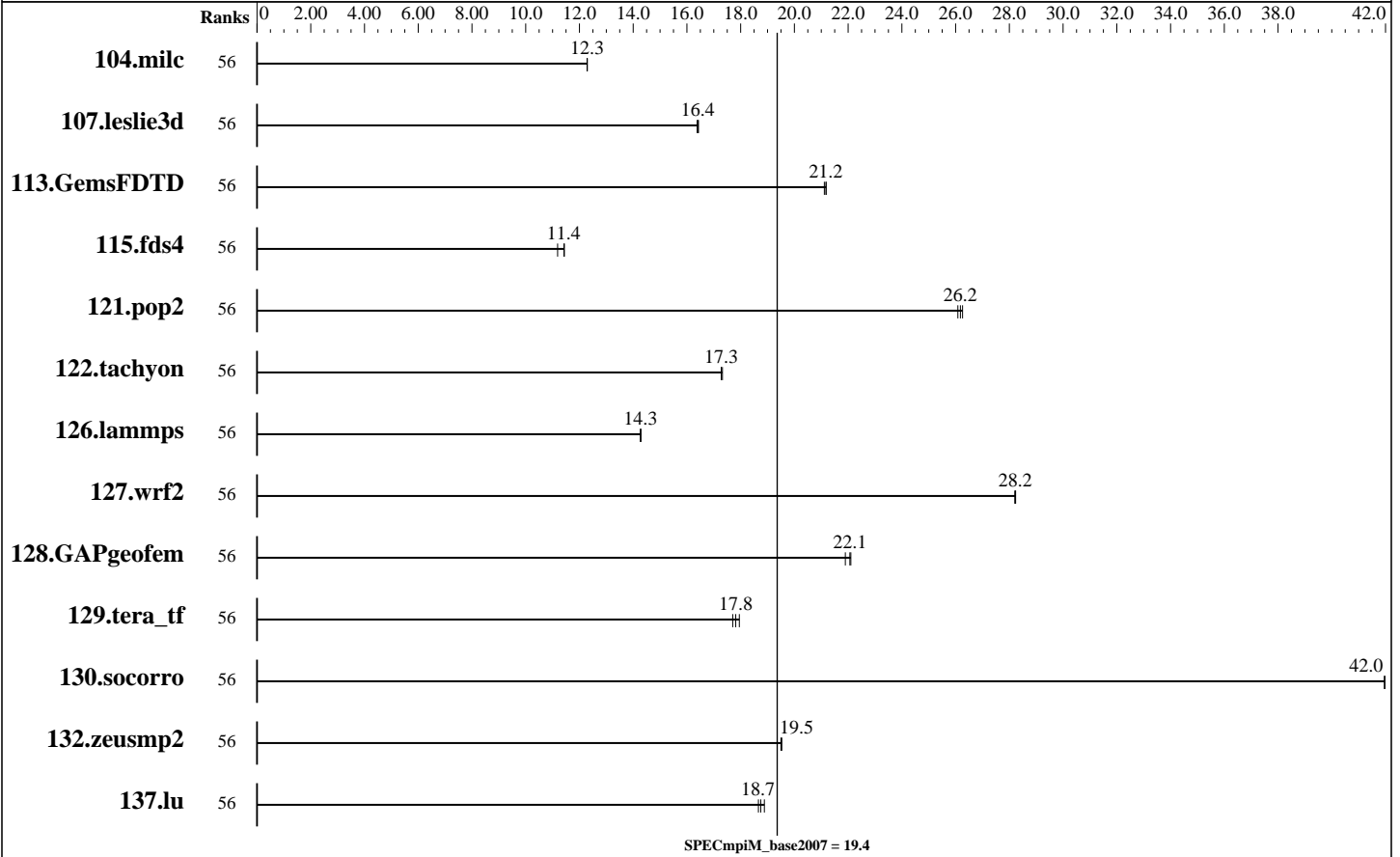
Test sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test date: Apr-2019

Hardware Availability: Apr-2019

Software Availability: Apr-2019



## Results Table

Benchmark	Base								Peak							
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
104.milc	56	127	12.3	<u>127</u>	<u>12.3</u>	127	12.3									
107.leslie3d	56	318	16.4	<u>318</u>	<u>16.4</u>	319	16.4									
113.GemsFDTD	56	<u>298</u>	<u>21.2</u>	298	21.2	299	21.1									
115.fds4	56	171	11.4	<u>171</u>	<u>11.4</u>	174	11.2									
121.pop2	56	157	26.3	<u>158</u>	<u>26.2</u>	158	26.1									
122.tachyon	56	161	17.3	162	17.3	<u>162</u>	<u>17.3</u>									
126.lammps	56	204	14.3	204	14.3	<u>204</u>	<u>14.3</u>									
127.wrf2	56	276	28.2	276	28.2	<u>276</u>	<u>28.2</u>									
128.GAPgeofem	56	94.3	21.9	93.4	22.1	<u>93.6</u>	<u>22.1</u>									
129.tera_tf	56	154	18.0	156	17.7	<u>155</u>	<u>17.8</u>									

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	56	<u>91.0</u>	<u>42.0</u>	91.0	42.0	90.9	42.0							
132.zeusmp2	56	<u>159</u>	<u>19.5</u>	159	19.5	159	19.5							
137.lu	56	<u>196</u>	<u>18.7</u>	195	18.9	197	18.7							

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: N/A  
 Total Compute Nodes: 1  
 Total Chips: 2  
 Total Cores: 56  
 Total Threads: 56  
 Total Memory: 768 GB  
 Base Ranks Run: 56  
 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: 1  
 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  
 shared / 28 cores  
 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 930-8i 2GB Flash  
 Adapter: N/A  
 Number of Adapters: 0  
 Slot Type: N/A  
 Data Rate: N/A

#### Software

Adapter: N/A  
 Adapter Driver: N/A  
 Adapter Firmware: N/A  
 Operating System: SUSE Linux Enterprise Server 12 SP4  
 4.12.14-94.41-default  
 Local File System: xfs  
 Shared File System: None  
 System State: Multi-user, run level 3  
 Other Software: None

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### Node Description: ThinkSystem SR650

Ports Used: 0  
Interconnect Type: None

### Interconnect Description: N/A

#### Hardware

#### Software

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

### 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 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.



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## 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 file that was used to format this result can be browsed at

[http://www.spec.org/mpi2007/flags/EM64T\\_Intel121\\_flags.20170711.html](http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20170711.html)

You can also download the XML flags source by saving the following link:

[http://www.spec.org/mpi2007/flags/EM64T\\_Intel121\\_flags.20170711.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](mailto:webmaster@spec.org).

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