



# SPEC® MPIM2007 Result

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## Lenovo Global Technology

SPECmpiM\_peak2007 = Not Run

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

SPECmpiM\_base2007 = 35.1

MPI2007 license: 28

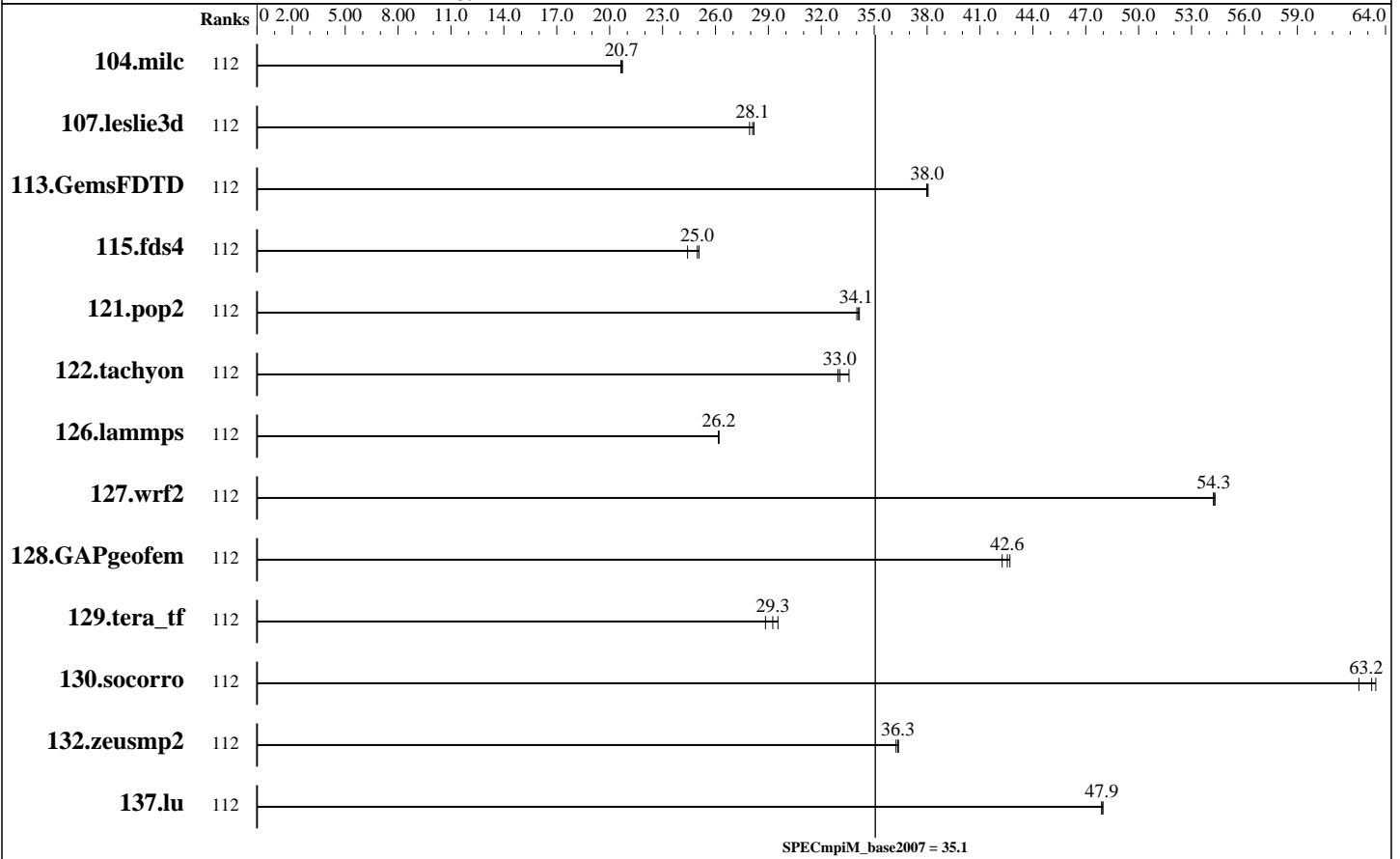
Test date: Jul-2018

Test sponsor: Lenovo Global Technology

Hardware Availability: Aug-2017

Tested by: Lenovo Global Technology

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	112	75.5	20.7	<u>75.7</u>	<u>20.7</u>	75.8	20.6									
107.leslie3d	112	<u>186</u>	<u>28.1</u>	185	28.2	187	27.9									
113.GemsFDTD	112	<u>166</u>	<u>38.0</u>	166	38.1	166	38.0									
115.fds4	112	<u>78.1</u>	<u>25.0</u>	77.8	25.1	79.9	24.4									
121.pop2	112	<u>121</u>	<u>34.1</u>	121	34.2	121	34.0									
122.tachyon	112	84.9	32.9	83.3	33.6	<u>84.6</u>	<u>33.0</u>									
126.lammmps	112	111	26.2	111	26.2	<u>111</u>	<u>26.2</u>									
127.wrf2	112	<u>144</u>	<u>54.3</u>	143	54.3	144	54.2									
128.GAPgeofem	112	<u>48.5</u>	<u>42.6</u>	48.4	42.7	48.9	42.3									
129.tera_tf	112	93.7	29.5	96.0	28.8	<u>94.6</u>	<u>29.3</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	112	60.2	63.4	<b><u>60.4</u></b>	<b><u>63.2</u></b>	61.1	62.5							
132.zeusmp2	112	85.3	36.4	<b><u>85.4</u></b>	<b><u>36.3</u></b>	85.6	36.2							
137.lu	112	76.7	47.9	76.6	48.0	<b><u>76.7</u></b>	<b><u>47.9</u></b>							

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: 4  
 Total Cores: 112  
 Total Threads: 112  
 Total Memory: 768 GB  
 Base Ranks Run: 112  
 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: 4  
 Cores enabled: 112  
 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: 768 GB (48 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

#### 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 2 x 16 GB 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.



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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 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/Lenovo-SPECmpiM_Platform_Flags.20180912.html)  
[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 sources by saving the following links:

[http://www.spec.org/mpi2007/flags/Lenovo-SPECmpiM\\_Platform\\_Flags.20180912.xml](http://www.spec.org/mpi2007/flags/Lenovo-SPECmpiM_Platform_Flags.20180912.xml)  
[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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