SPEC® MPIM2007 Result
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Lenovo Global Technology

ThinkSystem SR650
(Intel Xeon Platinum 8180 CPU, 2.50 GHz)

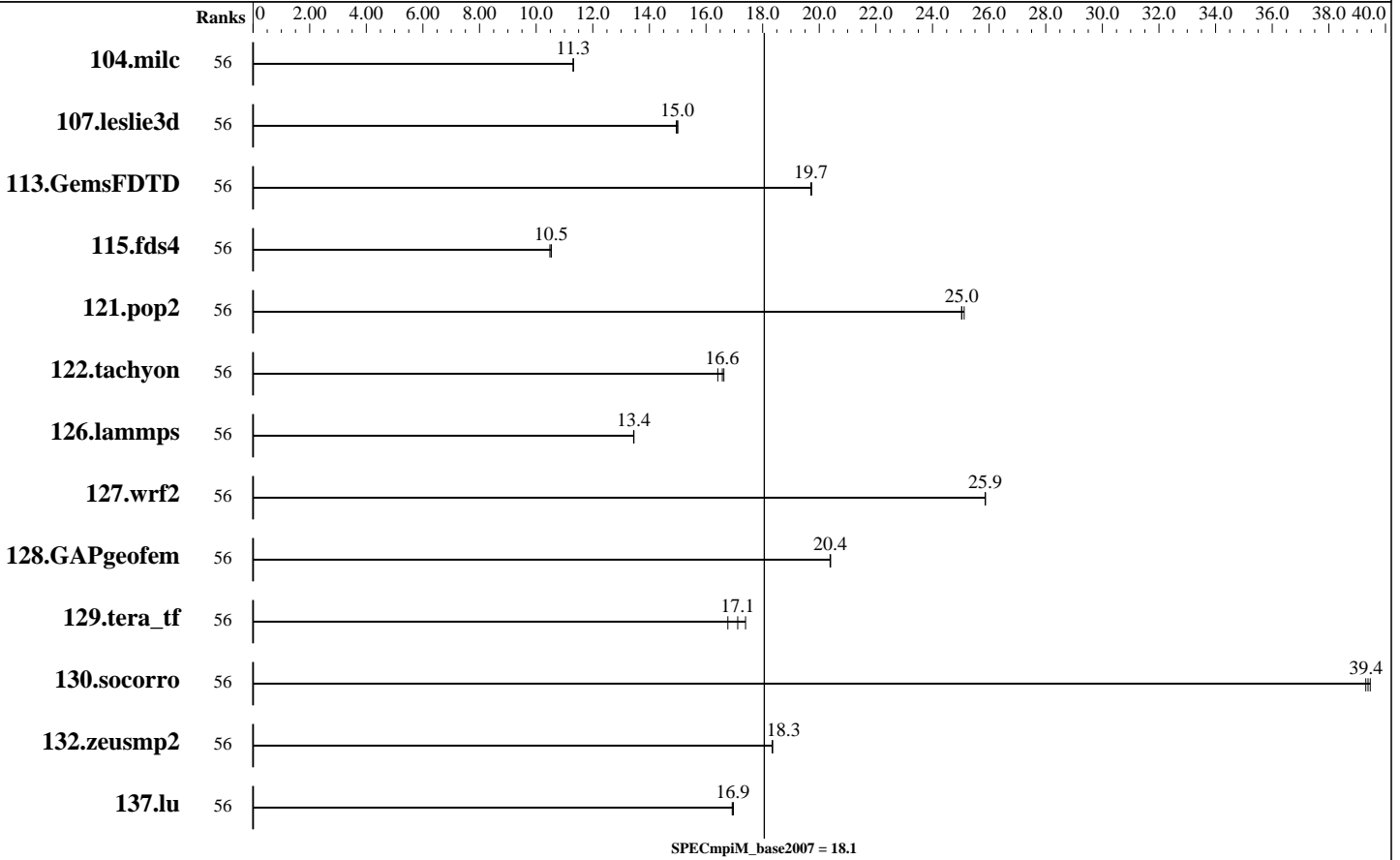SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 =   18.1

Ranks 0 2.00 4.00 6.00 8.00 10.0 12.0 14.0 16.0 18.0 20.0 22.0 24.0 26.0 28.0 30.0 32.0 34.0 36.0 38.0 40.0

Benchmark	Ranks	Value
104.milc	56	11.3
107.leslie3d	56	15.0
113.GemsFDTD	56	19.7
115.fds4	56	10.5
121.pop2	56	25.0
122.tachyon	56	16.6
126.lammps	56	13.4
127.wrf2	56	25.9
128.GAPgeofem	56	20.4
129.tera_tf	56	17.1
130.socorro	56	39.4
132.zeusmp2	56	18.3
137.lu	56	16.9

SPECmpiM_base2007 = 18.1

Results Table

Benchmark	Ranks	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Ranks	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
104.milc	56	**138**	**11.3**	138	11.3	138	11.3							
107.leslie3d	56	**348**	**15.0**	349	14.9	348	15.0							
113.GemsFDTD	56	320	19.7	320	19.7	**320**	**19.7**							
115.fds4	56	**185**	**10.5**	186	10.5	185	10.5							
121.pop2	56	**165**	**25.0**	164	25.1	165	25.0							
122.tachyon	56	170	16.4	**169**	**16.6**	168	16.6							
126.lammps	56	217	13.4	217	13.5	**217**	**13.4**							
127.wrf2	56	**301**	**25.9**	301	25.9	301	25.9							
128.GAPgeofem	56	101	20.4	**101**	**20.4**	101	20.4							
129.tera_tf	56	**162**	**17.1**	159	17.4	165	16.8							

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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MPI2007 license: 28	**Test date:** Aug-2018
Test sponsor: Lenovo Global Technology	**Hardware Availability:** Aug-2017
Tested by: Lenovo Global Technology	**Software Availability:** Jul-2018

Results Table (Continued)

Benchmark	Ranks	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Ranks	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
130.socorro	56	**96.9**	**39.4**	96.7	39.5	97.1	39.3							
132.zeusmp2	56	**169**	**18.3**	169	18.3	169	18.3							
137.lu	56	**217**	**16.9**	217	16.9	217	17.0							

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 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 8180
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:	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 (24 x 32 GB 2Rx4 PC4-2666V)
Disk Subsystem:	800 GB 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:	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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Tested by: Lenovo Global Technology		**Software Availability:**	Jul-2018

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.

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/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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Hardware Availability: Aug-2017
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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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