



SPEC® MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR950
(Intel Xeon Platinum 8280L CPU, 2.70 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 28.6

MPI2007 license: 28

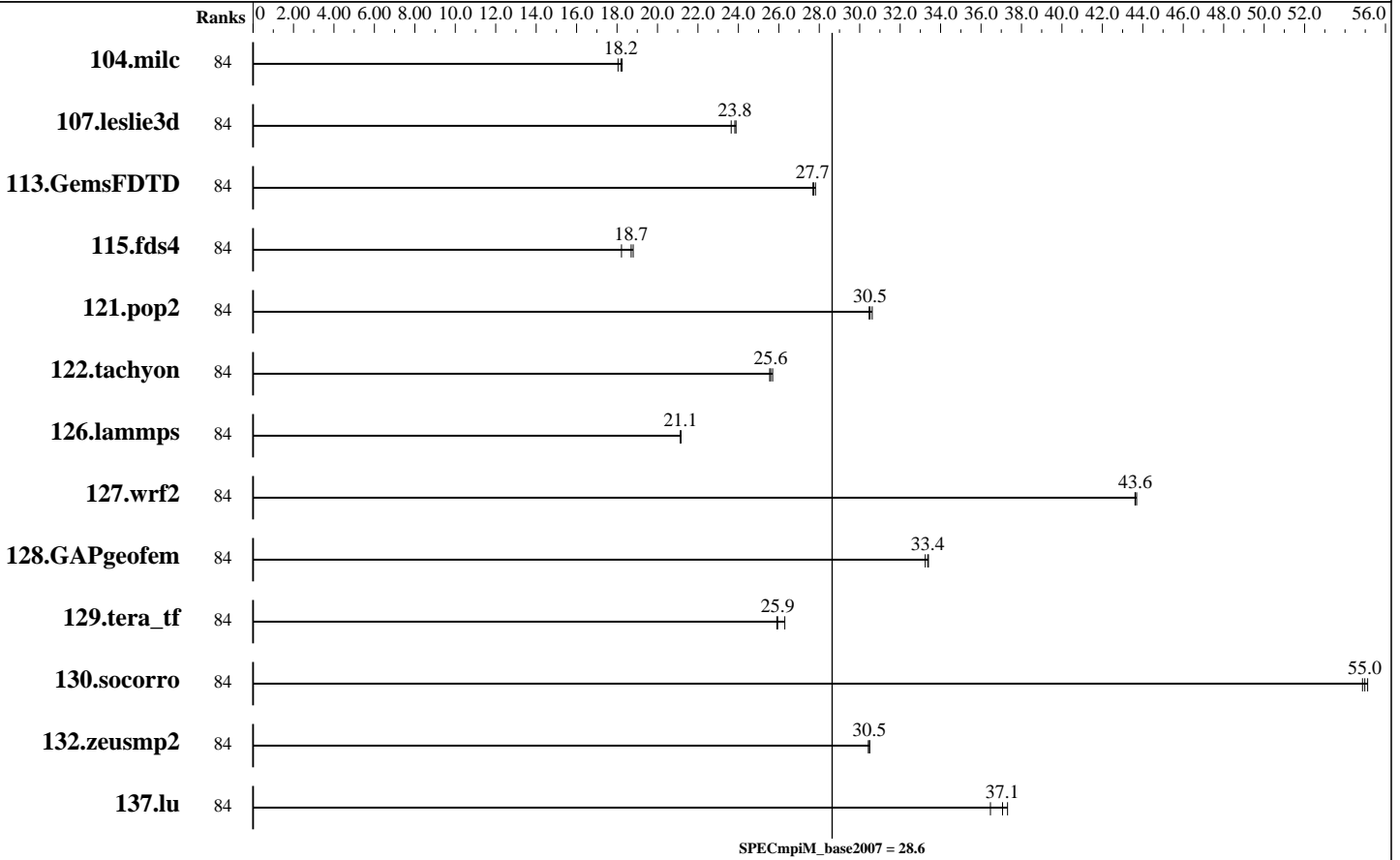
Test sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test date: Mar-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 | 84 | 85.7 | 18.3 | 86.0 | 18.2 | 86.7 | 18.0 | | | | | | | |
| 107.leslie3d | 84 | 219 | 23.8 | 219 | 23.9 | 221 | 23.6 | | | | | | | |
| 113.GemsFDTD | 84 | 227 | 27.8 | 228 | 27.7 | 228 | 27.7 | | | | | | | |
| 115.fds4 | 84 | 104 | 18.8 | 104 | 18.7 | 107 | 18.2 | | | | | | | |
| 121.pop2 | 84 | 135 | 30.5 | 135 | 30.5 | 135 | 30.6 | | | | | | | |
| 122.tachyon | 84 | 109 | 25.6 | 109 | 25.5 | 109 | 25.7 | | | | | | | |
| 126.lammps | 84 | 138 | 21.2 | 138 | 21.1 | 138 | 21.1 | | | | | | | |
| 127.wrf2 | 84 | 178 | 43.7 | 179 | 43.6 | 179 | 43.6 | | | | | | | |
| 128.GAPgeofem | 84 | 61.9 | 33.4 | 62.1 | 33.2 | 61.8 | 33.4 | | | | | | | |
| 129.tera_tf | 84 | 107 | 25.9 | 105 | 26.3 | 107 | 25.9 | | | | | | | |

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 | 69.2 | 55.1 | 69.4 | 55.0 | 69.6 | 54.9 | | | | | | | | | |
| 132.zeusmp2 | 84 | 102 | 30.5 | 102 | 30.5 | 102 | 30.4 | | | | | | | | | |
| 137.lu | 84 | 101 | 36.5 | 98.5 | 37.3 | 99.2 | 37.1 | | | | | | | | | |

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: 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 18.0 Update 3 for Linux
 Version 18.0.3 Build 20180410
 C++ Compiler: Intel C++ Compiler 18.0 Update 3 for Linux
 Version 18.0.3 Build 20180410
 Fortran Compiler: Intel Fortran Compiler 18.0 Update 3 for Linux
 Version 18.0.3 Build 20180410
 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 8280L
 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: 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
 Other Cache: None
 Memory: 576 GB (36 x 16 GB 2Rx8 PC4-2933Y-R)
 Disk Subsystem: 1 x 1 TB NVMe 2.5" SSD
 Other Hardware: N/A
 Adapter: N/A
 Number of Adapters: 0
 Slot Type: N/A
 Data Rate: N/A
 Ports Used: 0

Software

Adapter: N/A
 Adapter Driver: N/A
 Adapter Firmware: N/A
 Operating System: Red Hat Enterprise Linux Server release 7.6,
 Kernel 3.10.0-957.el7.x86_64
 Local File System: xfs
 Shared File System: None
 System State: Multi-user, run level 3
 Other Software: None

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Software Availability: Apr-2019

Node Description: ThinkSystem SR950

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 16 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 files that were 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/Lenovo-SPECmpiM_Platform_Flags.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20170711.xml
http://www.spec.org/mpi2007/flags/Lenovo-SPECmpiM_Platform_Flags.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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