



SPEC® MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Lenovo Global Technology

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

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 34.7

MPI2007 license: 28

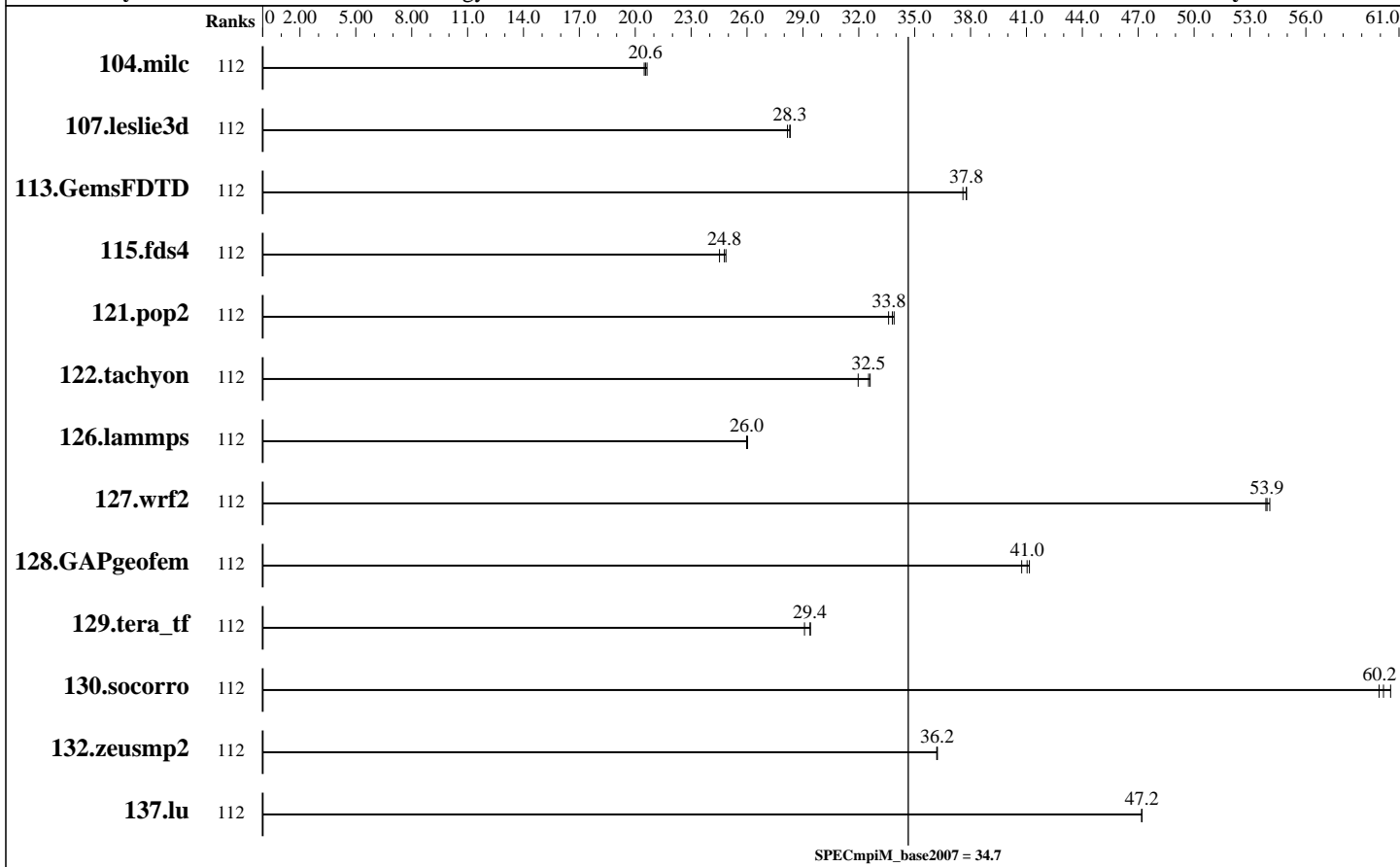
Test sponsor: Lenovo Global Technology

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	112	75.8	20.6	<u>76.1</u>	<u>20.6</u>	76.4	20.5							
107.leslie3d	112	184	28.3	<u>184</u>	<u>28.3</u>	185	28.2							
113.GemsFDTD	112	<u>167</u>	<u>37.8</u>	167	37.8	168	37.6							
115.fds4	112	78.5	24.9	79.6	24.5	<u>78.7</u>	<u>24.8</u>							
121.pop2	112	122	33.9	123	33.6	<u>122</u>	<u>33.8</u>							
122.tachyon	112	<u>86.0</u>	<u>32.5</u>	87.5	32.0	85.8	32.6							
126.lammps	112	112	26.0	<u>112</u>	<u>26.0</u>	112	26.0							
127.wrf2	112	144	54.1	<u>145</u>	<u>53.9</u>	145	53.9							
128.GAPgeofem	112	50.2	41.2	<u>50.3</u>	<u>41.0</u>	50.7	40.7							
129.tera_tf	112	94.1	29.4	<u>94.2</u>	<u>29.4</u>	95.2	29.1							

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	63.0	60.5	63.7	59.9	63.4	60.2							
132.zeusmp2	112	<u>85.7</u>	<u>36.2</u>	85.7	36.2	85.8	36.2							
137.lu	112	77.9	47.2	<u>77.9</u>	<u>47.2</u>	77.9	47.2							

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: Intel Omni-Path
 Total Compute Nodes: 2
 Total Chips: 4
 Total Cores: 112
 Total Threads: 112
 Total Memory: 1536 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 SR650

Hardware

Number of nodes: 2
 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: Intel Omni-Path Fabric Adapter 100 Series
 Number of Adapters: 1
 Slot Type: PCI-Express x16
 Data Rate: 100 Gb/s

Software

Adapter: Intel Omni-Path Fabric Adapter 100 Series
 Adapter Driver: IFS 10.4.2.0.7
 Adapter Firmware: 10.4.0.0.146
 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: nfs
 System State: Multi-user
 Other Software: NONE

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Node Description: ThinkSystem SR650

Ports Used: 1
Interconnect Type: Direct Attached Cable (DAC)

Interconnect Description: Intel Omni-Path

Hardware

Vendor: Intel
Model: Intel Omni-Path Fabric Adapter 100 Series
Switch Model: N/A
Number of Switches: 0
Number of Ports: 0
Data Rate: N/A
Firmware: N/A
Topology: Direct Connect
Primary Use: MPI Traffic

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

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