



SPEC® MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECmpiM_peak2007 = Not Run

ThinkSystem SR665
(AMD EPYC 7H12, 2.6 GHz)

SPECmpiM_base2007 = 34.1

MPI2007 license: 28

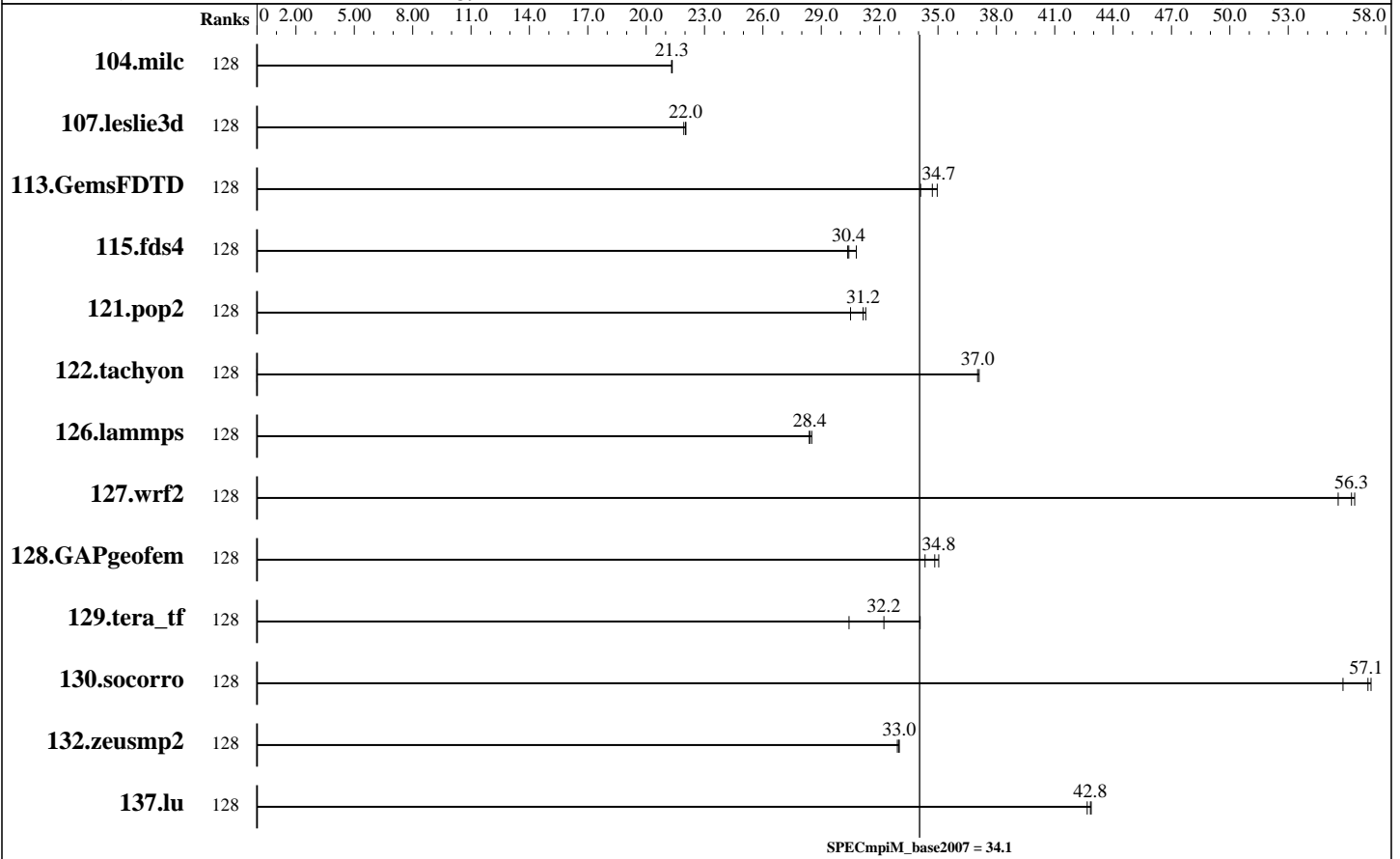
Test date: Jan-2020

Test sponsor: Lenovo Global Technology

Hardware Availability: Jun-2020

Tested by: Lenovo Global Technology

Software Availability: Jun-2020



Results Table

Benchmark	Base								Peak							
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
104.milc	128	73.3	21.3	73.5	21.3	73.4	21.3									
107.leslie3d	128	237	22.0	237	22.0	238	21.9									
113.GemsFDTD	128	185	34.1	180	35.0	182	34.7									
115.fds4	128	63.3	30.8	64.3	30.4	64.1	30.4									
121.pop2	128	132	31.3	135	30.5	133	31.2									
122.tachyon	128	75.5	37.0	169877	0.0000490	75.4	37.1									
126.lammps	128	102	28.5	103	28.4	103	28.4									
127.wrf2	128	140	55.6	138	56.4	139	56.3									
128.GAPgeofem	128	59.3	34.8	58.9	35.0	60.1	34.3									
129.tera_tf	128	81.2	34.1	91.0	30.4	85.9	32.2									

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	128	68.4	55.8	66.7	57.3	66.9	57.1							
132.zeusmp2	128	<u>94.0</u>	<u>33.0</u>	94.3	32.9	94.0	33.0							
137.lu	128	86.2	42.7	85.8	42.8	85.7	42.9							

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 SR665
 File Server Node: NFS
 Total Compute Nodes: 1
 Total Chips: 2
 Total Cores: 128
 Total Threads: 128
 Total Memory: 1 TB
 Base Ranks Run: 128
 Minimum Peak Ranks: --
 Maximum Peak Ranks: --

Software Summary

C Compiler: Intel C Compiler 20.0 for Linux
 Version 19.1.0.166 Build 20191121
 C++ Compiler: Intel C++ Compiler 20.0 for Linux
 Version 19.1.0.166 Build 20191121
 Fortran Compiler: Intel Fortran Compiler for Linux
 Version 19.1.0.166 Build 20191121
 Base Pointers: 64-bit
 Peak Pointers: Not Applicable
 MPI Library: MPICH MPI Library
 Version 3.3.2
 Other MPI Info: None
 Pre-processors: No
 Other Software: None

Node Description: ThinkSystem SR665

Hardware

Number of nodes: 1
 Uses of the node: compute
 Vendor: Lenovo Global Technology
 Model: SR665
 CPU Name: AMD EPYC 7H12
 CPU(s) orderable: 1-2 chips
 Chips enabled: 2
 Cores enabled: 128
 Cores per chip: 64
 Threads per core: 1
 CPU Characteristics: None
 CPU MHz: 2600
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 512 KB I+D on chip per core
 L3 Cache: 256 MB I+D on chip per chip
 16 MB shared / 4 cores
 Other Cache: None
 Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R)
 Disk Subsystem: 1 x 480 GB SATA 2.5" SSD
 Other Hardware: None
 Adapter: Mellanox ConnectX-6 HDR Infiniband
 Number of Adapters: 1
 Slot Type: PCI-Express 4.0 x16

Software

Adapter: Mellanox ConnectX-6 HDR Infiniband
 Adapter Driver: 4.7-1.0.0.1.2
 Adapter Firmware: 20.25.2006
 Operating System: Red Hat Enterprise Linux Server release 8.1,
 4.18.0-147.el8.x86_64
 Local File System: xfs
 Shared File System: None
 System State: Multi-user, run level 3
 Other Software: None

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Tested by: Lenovo Global Technology

Software Availability: Jun-2020

Node Description: ThinkSystem SR665

Data Rate: 200 Gbs/s
Ports Used: 1
Interconnect Type: Mellanox ConnectX-6 HDR Infiniband Adapter

Node Description: NFS

Hardware

Software

Number of nodes: 1
Uses of the node: Fileserver
Vendor: Lenovo Global Technology
Model: ThinkSystem SR665
CPU Name: AMD EPYC 7H12 CPU
CPU(s) orderable: 1-2 chips
Chips enabled: 2
Cores enabled: 128
Cores per chip: 64
Threads per core: 1
CPU Characteristics: None
CPU MHz: 2600
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 512 KB I+D on chip per core
L3 Cache: 256 MB I+D on chip per chip
16 MB shared / 4 cores
Other Cache: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R)
Disk Subsystem: 1 x 480 GB SATA 2.5" SSD
Other Hardware: None
Adapter: Mellanox ConnectX-6 HDR Infiniband
Number of Adapters: 1
Slot Type: PCI-Express 4.0 x16
Data Rate: 200 Gb/s
Ports Used: 1
Interconnect Type: Mellanox ConnectX-6 HDR Infiniband

Adapter: Mellanox ConnectX-6 HDR Infiniband
Adapter Driver: 4.7-1.0.0.1.2
Adapter Firmware: 20.25.2006
Operating System: Red Hat Enterprise Linux Server release 8.1
Local File System: None
Shared File System: NFS
System State: Multi-User, run level 3
Other Software: None

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 1 x 32 GB RDIMM on each memory channel.
Add "idle=poll" into grub
BIOS settings:

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General Notes (Continued)

Operating Mode : Maximum Performance Mode
Hyper-Threading Technology (SMT): Enabled
NPS4

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.

Base Compiler Invocation

C benchmarks:

/opt/mpich/m332_I201_H47_R81/bin/mpicc

C++ benchmarks:

126.lammps: /opt/mpich/m332_I201_H47_R81/bin/mpicxx

Fortran benchmarks:

/opt/mpich/m332_I201_H47_R81/bin/mpif90

Benchmarks using both Fortran and C:

/opt/mpich/m332_I201_H47_R81/bin/mpicc
/opt/mpich/m332_I201_H47_R81/bin/mpif90

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 -march=core-avx2 -no-prec-div -ipo

C++ benchmarks:

126.lammps: -O3 -march=core-avx2 -no-prec-div -ipo

Fortran benchmarks:

-O3 -march=core-avx2 -no-prec-div -ipo

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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

`-O3 -march=core-avx2 -no-prec-div -ipo`

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

http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20200506.01.html

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

http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20200506.01.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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