



SPEC® MPIL2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR665
(AMD EPYC 7H12, 2.6 GHz)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 13.6

MPI2007 license: 28

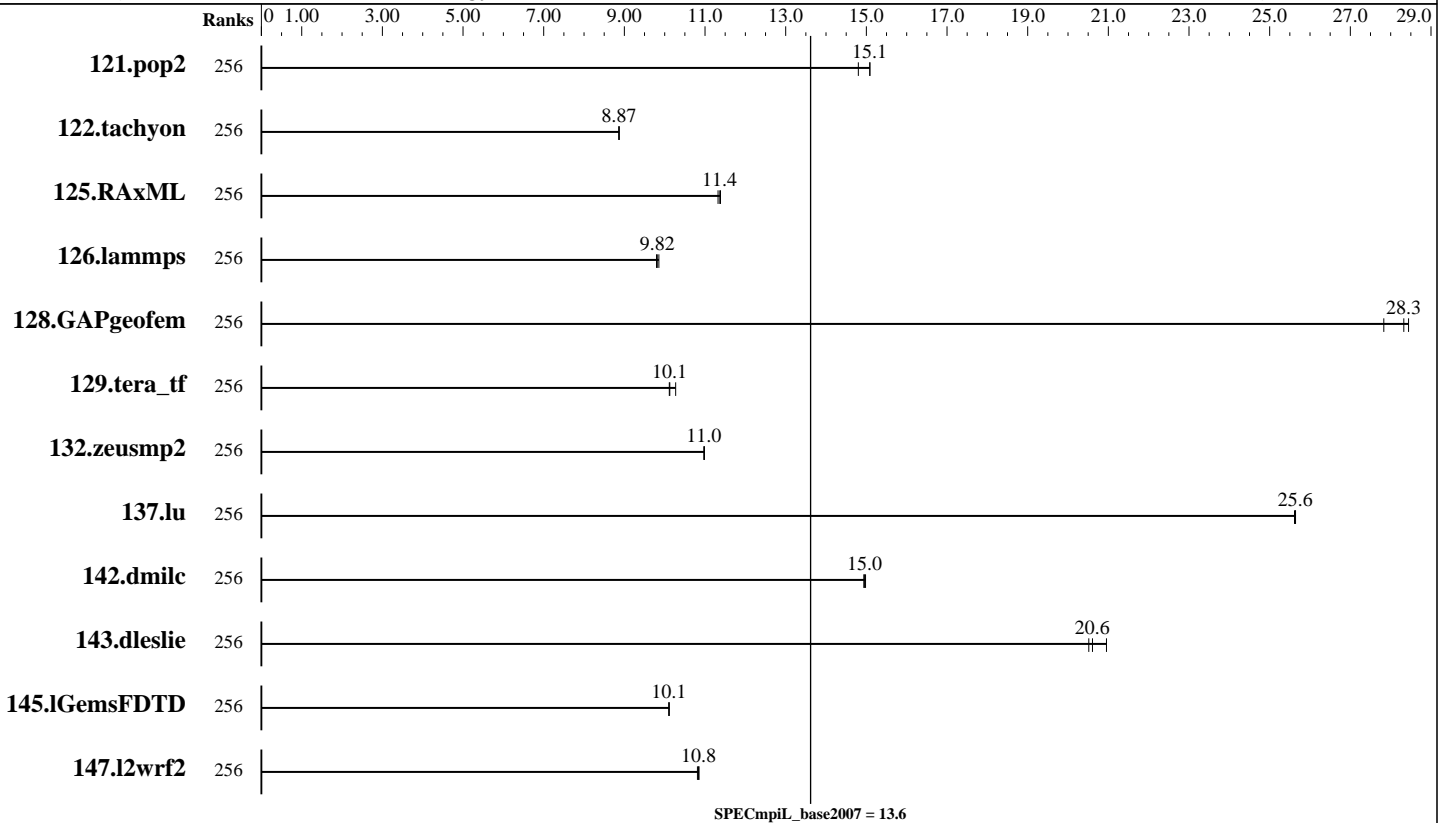
Test sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test date: Jan-2020

Hardware Availability: Jun-2020

Software Availability: Jun-2020



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
121.pop2	256	263	14.8	<u>258</u>	<u>15.1</u>	258	15.1							
122.tachyon	256	<u>219</u>	<u>8.87</u>	219	8.86	219	8.87							
125.RAxML	256	<u>257</u>	<u>11.4</u>	256	11.4	258	11.3							
126.lammps	256	249	9.86	251	9.80	<u>251</u>	<u>9.82</u>							
128.GAPgeofem	256	213	27.8	209	28.4	<u>209</u>	<u>28.3</u>							
129.tera_tf	256	107	10.3	<u>109</u>	<u>10.1</u>	109	10.1							
132.zeusmp2	256	<u>193</u>	<u>11.0</u>	193	11.0	193	11.0							
137.lu	256	164	25.6	<u>164</u>	<u>25.6</u>	164	25.6							
142.dmilc	256	247	14.9	246	15.0	<u>246</u>	<u>15.0</u>							
143.dleslie	256	148	21.0	151	20.5	<u>150</u>	<u>20.6</u>							
145.lGemsFDTD	256	437	10.1	<u>436</u>	<u>10.1</u>	436	10.1							
147.l2wrf2	256	759	10.8	756	10.9	<u>757</u>	<u>10.8</u>							

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Standard Performance Evaluation Corporation

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http://www.spec.org/



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Hardware Summary

Type of System: Homogeneous
 Compute Node: ThinkSystem SR665
 Interconnect: Mellanox ConnectX-6 HDR
 File Server Node: NFS
 Total Compute Nodes: 2
 Total Chips: 4
 Total Cores: 256
 Total Threads: 256
 Total Memory: 2 TB
 Base Ranks Run: 256
 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 20.0 for Linux
 Version 19.1.0.166 Build 20191121
 Base Pointers: 64-bit
 Peak Pointers: Not Applicable
 MPI Library: Open MPI Library
 Version 4.0.2
 Other MPI Info: None
 Pre-processors: No
 Other Software: None

Node Description: ThinkSystem SR665

Hardware

Number of nodes: 2
 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
 Data Rate: 200 Gbs/s
 Ports Used: 1
 Interconnect Type: Mellanox ConnectX-6 HDR Infiniband Adapter

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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Software Availability: Jun-2020

Node Description: NFS

Hardware		Software	
Number of nodes:	1	Adapter:	Mellanox ConnectX-6 HDR Infiniband
Uses of the node:	Fileserver	Adapter Driver:	4.7-1.0.0.1.2
Vendor:	Lenovo Global Technology	Adapter Firmware:	20.25.2006
Model:	ThinkSystem SR665	Operating System:	Red Hat Enterprise Linux Server release 8.1
CPU Name:	AMD EPYC 7H12 CPU	Local File System:	None
CPU(s) orderable:	1-2 chips	Shared File System:	NFS
Chips enabled:	2	System State:	Multi-User, run level 3
Cores enabled:	128	Other Software:	None
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		

Interconnect Description: Mellanox ConnectX-6 HDR

Hardware		Software	
Vendor:	Mellanox		
Model:	Infiniband EDR 100Gb/s Switch		
Switch Model:	SB7800 Series		
Number of Switches:	1		
Number of Ports:	36		
Data Rate:	100 Gb/s		
Firmware:	3.9.0300		
Topology:	Mesh		
Primary Use:	MPI Traffic		

Submit Notes

The config file option 'submit' was used.



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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:

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/OMPI/O402_I20_H47_R81/bin/mpicc

C++ benchmarks:

126.lammps: /opt/OMPI/O402_I20_H47_R81/bin/mpicxx

Fortran benchmarks:

/opt/OMPI/O402_I20_H47_R81/bin/mpif90

Benchmarks using both Fortran and C:

/opt/OMPI/O402_I20_H47_R81/bin/mpicc

/opt/OMPI/O402_I20_H47_R81/bin/mpif90

Base Portability Flags

121.pop2: -DSPEC_MPI_CASE_FLAG

126.lammps: -DMPICH_IGNORE_CXX_SEEK

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

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Base Optimization Flags (Continued)

Fortran benchmarks:

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

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.20200506.00.html

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

http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20200506.00.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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