



SPEC® MPIL2007 Result

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Lenovo Global Technology

ThinkSystem SR655
(AMD EPYC 7763, 2.45 GHz)

SPECmpiL_peak2007 = 3.23

SPECmpiL_base2007 = 3.23

MPI2007 license: 28

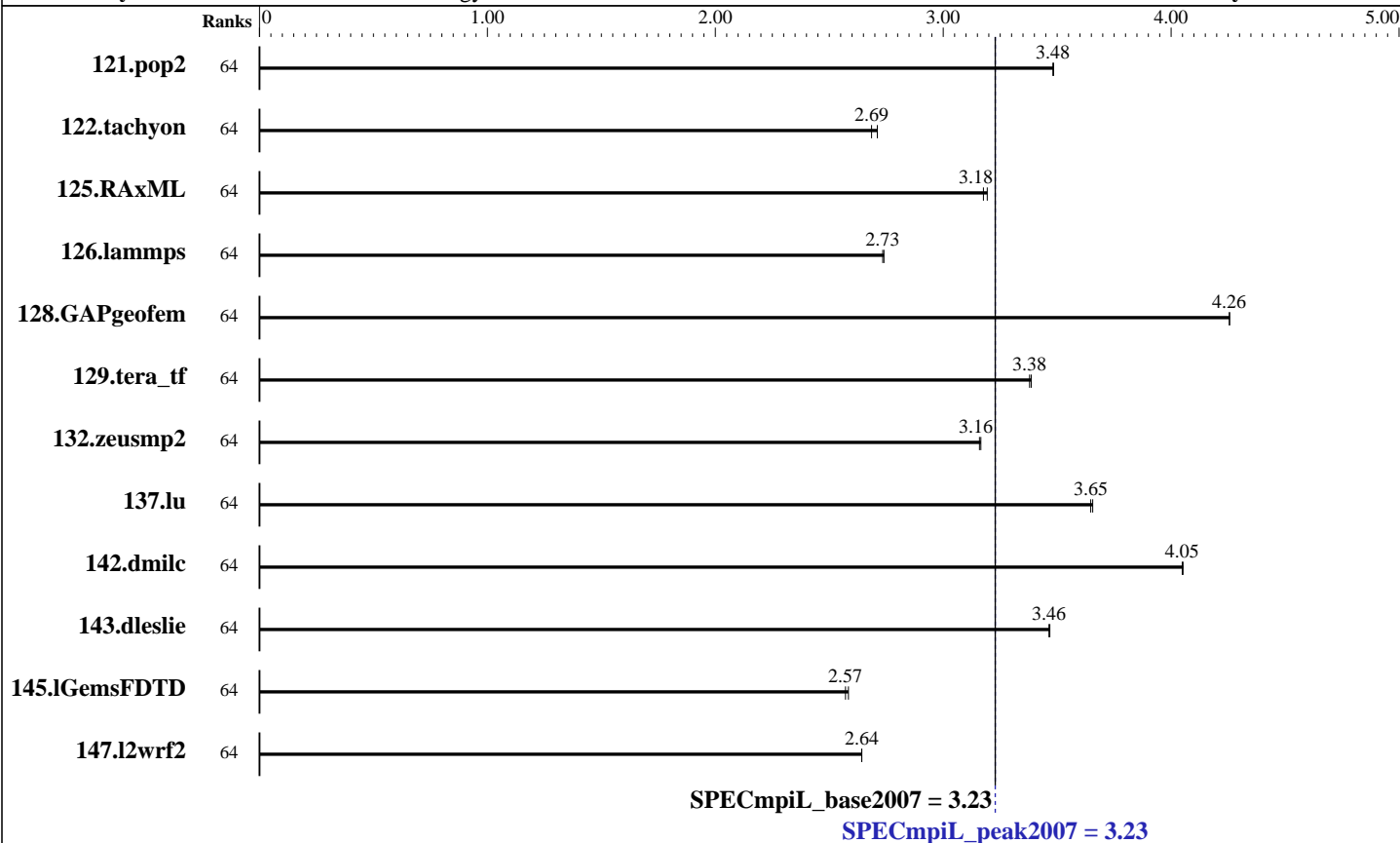
Test sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test date: Mar-2021

Hardware Availability: Jun-2021

Software Availability: Jun-2021



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
121.pop2	64	1117	3.48	1118	3.48			64	1117	3.48	1118	3.48		
122.tachyon	64	717	2.71	724	2.69			64	717	2.71	724	2.69		
125.RAxML	64	919	3.18	914	3.19			64	919	3.18	914	3.19		
126.lammps	64	897	2.74	899	2.73			64	897	2.74	899	2.73		
128.GAPgeofem	64	1394	4.26	1395	4.26			64	1394	4.26	1395	4.26		
129.tera_tf	64	325	3.39	325	3.38			64	325	3.39	325	3.38		
132.zeusmp2	64	670	3.17	671	3.16			64	670	3.17	671	3.16		
137.lu	64	1149	3.66	1152	3.65			64	1149	3.66	1152	3.65		
142.dmilc	64	910	4.05	909	4.05			64	910	4.05	909	4.05		
143.dleslie	64	895	3.46	894	3.47			64	895	3.46	894	3.47		
145.lGemsFDTD	64	1707	2.58	1716	2.57			64	1707	2.58	1716	2.57		
147.l2wrf2	64	3104	2.64	3105	2.64			64	3104	2.64	3105	2.64		

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

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Hardware Summary

Type of System: Homogeneous
 Compute Node: ThinkSystem SR655
 Interconnect: Mellanox ConnectX-6 HDR
 File Server Node: NFS
 Total Compute Nodes: 1
 Total Chips: 1
 Total Cores: 64
 Total Threads: 64
 Total Memory: 256 GB
 Base Ranks Run: 64
 Minimum Peak Ranks: 64
 Maximum Peak Ranks: 64

Software Summary

C Compiler: Intel C Compiler 20.4 for Linux
 Version 19.1.3.304 Build 20200925
 C++ Compiler: Intel C++ Compiler 20.4 for Linux
 Version 19.1.3.304 Build 20200925
 Fortran Compiler: Intel Fortran Compiler 20.4 for Linux
 Version 19.1.3.304 Build 20200925
 Base Pointers: 64-bit
 Peak Pointers: Not Applicable
 MPI Library: Intel MPI Library for Linux
 Version 2019 Update 11 Build 20210330
 Other MPI Info: None
 Pre-processors: No
 Other Software: None

Node Description: ThinkSystem SR655

Hardware

Number of nodes: 1
 Uses of the node: compute
 Vendor: Lenovo Global Technology
 Model: SR655
 CPU Name: AMD EPYC 7763
 CPU(s) orderable: 1 chips
 Chips enabled: 1
 Cores enabled: 64
 Cores per chip: 64
 Threads per core: 1
 CPU Characteristics: Turbo up to 3.5 GHz
 CPU MHz: 2450
 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
 32 MB shared / 8 cores
 Other Cache: None
 Memory: 256 GB (8 x 32 GB 2Rx8 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: 5.2-1.0.4
 Adapter Firmware: 20.25.2006
 Operating System: Red Hat Enterprise Linux Server release 8.3
 4.18.0-240.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-2021

Node Description: NFS

Hardware		Software	
Number of nodes:	1	Adapter:	Mellanox ConnectX-6 HDR Infiniband
Uses of the node:	Fileserver	Adapter Driver:	5.2-1.0.4
Vendor:	Lenovo Global Technology	Adapter Firmware:	20.25.2006
Model:	ThinkSystem SR655	Operating System:	Red Hat Enterprise Linux Server release 8.3
CPU Name:	AMD EPYC 7763 CPU	Local File System:	None
CPU(s) orderable:	1 chips	Shared File System:	NFS
Chips enabled:	1	System State:	Multi-User, run level 3
Cores enabled:	64	Other Software:	None
Cores per chip:	64		
Threads per core:	1		
CPU Characteristics:	None		
CPU MHz:	2450		
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		
	32 MB shared / 8 cores		
Other Cache:	None		
Memory:	256 GB (8 x 32 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 HDR 200Gb/s Switch		
Switch Model:	QM8700 Series		
Number of Switches:	1		
Number of Ports:	40		
Data Rate:	200 Gb/s		
Firmware:	3.9.0606		
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): Disabled

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:

`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`

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

Peak Optimization Flags

C benchmarks:

122.tachyon: basepeak = yes

125.RAxML: basepeak = yes

142.dmilc: basepeak = yes

C++ benchmarks:

126.lammps: basepeak = yes

Fortran benchmarks:

129.tera_tf: basepeak = yes

137.lu: basepeak = yes

143.dleslie: basepeak = yes

145.lGemsFDTD: basepeak = yes

Benchmarks using both Fortran and C:

121.pop2: basepeak = yes

128.GAPgeofem: basepeak = yes

132.zeusmp2: basepeak = yes

147.l2wrf2: basepeak = yes

The flags files that were used to format this result can be browsed at

http://www.spec.org/mpi2007/flags/Lenovo_Platform_Flags.html

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

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

http://www.spec.org/mpi2007/flags/Lenovo_Platform_Flags.xml

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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