SPEC® MPIL2007 Result

Lenovo Global Technology

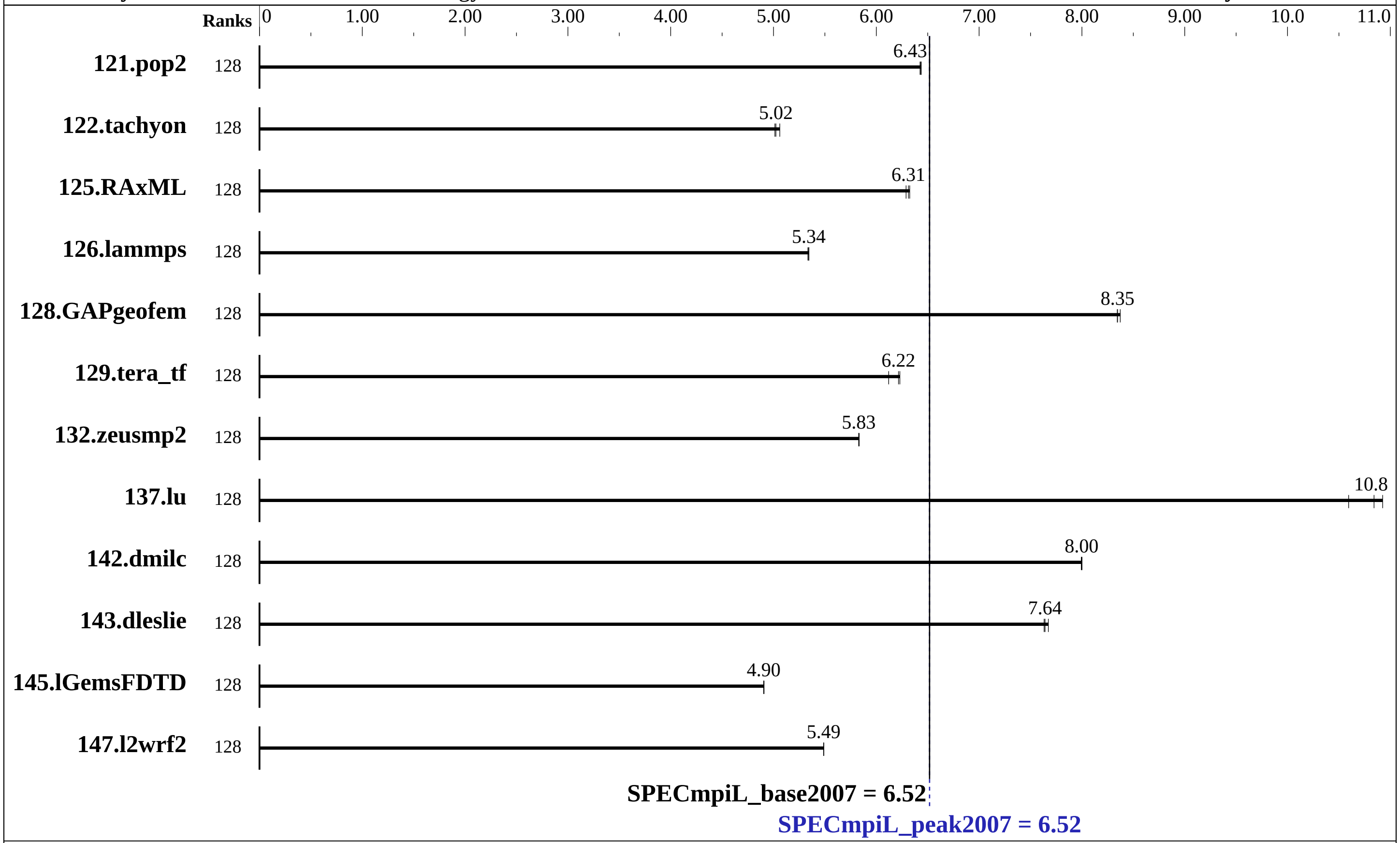
ThinkSystem SR665
(AMD EPYC 7763, 2.45 GHz)

SPECmpiL_peak2007 = 6.52

SPECmpiL_base2007 = 6.52

MPI2007 license: 28
Test sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test date: Mar-2021
Hardware Availability: Mar-2021
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	128	606	6.43	604	6.44	**605**	**6.43**	128	606	6.43	604	6.44	**605**	**6.43**
122.tachyon	128	**387**	**5.02**	384	5.06	388	5.01	128	**387**	**5.02**	384	5.06	388	5.01
125.RAxML	128	462	6.32	**462**	**6.31**	464	6.29	128	462	6.32	**462**	**6.31**	464	6.29
126.lammps	128	460	5.34	**460**	**5.34**	461	5.33	128	460	5.34	**460**	**5.34**	461	5.33
128.GAPgeofem	128	709	8.37	**711**	**8.35**	711	8.34	128	709	8.37	**711**	**8.35**	711	8.34
129.tera_tf	128	180	6.12	176	6.23	**177**	**6.22**	128	180	6.12	176	6.23	**177**	**6.22**
132.zeusmp2	128	363	5.83	364	5.83	**364**	**5.83**	128	363	5.83	364	5.83	**364**	**5.83**
137.lu	128	397	10.6	**388**	**10.8**	385	10.9	128	397	10.6	**388**	**10.8**	385	10.9
142.dmilc	128	**461**	**8.00**	460	8.00	461	7.99	128	**461**	**8.00**	460	8.00	461	7.99
143.dleslie	128	**406**	**7.64**	406	7.63	404	7.67	128	**406**	**7.64**	406	7.63	404	7.67
145.lGemsFDTD	128	899	4.90	899	4.91	**899**	**4.90**	128	899	4.90	899	4.91	**899**	**4.90**
147.l2wrf2	128	1495	5.49	1495	5.49	**1495**	**5.49**	128	1495	5.49	1495	5.49	**1495**	**5.49**

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

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Test sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology
Test date: Mar-2021
Hardware Availability: Mar-2021
Software Availability: Jun-2020

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:	128
Maximum Peak Ranks:	128

Software Summary

C Compiler:	Intel C++ Compiler 20.2 for Linux Version 19.1.2.254 Build 20200623
C++ Compiler:	Intel C++ Compiler 20.2 for Linux Version 19.1.2.254 Build 20200623
Fortran Compiler:	Intel Fortran Compiler 20.2 for Linux Version 19.1.2.254 Build 20200623
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
MPI Library:	Intel MPI Library for Linux Version 4.1.0
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 7763
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:	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:	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:	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

Node Description: NFS

Hardware

Number of nodes:	1
Uses of the node:	Fileserver
Vendor:	Lenovo Global Technology
Model:	ThinkSystem SR665
CPU Name:	AMD EPYC 7763 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:	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:	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

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
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:
  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,
```

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General Notes (Continued)

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

C++ benchmarks:

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

Fortran benchmarks:
`-O3 -ipo -march=core-avx2 -no-prec-div`

Benchmarks using both Fortran and C:
`-O3 -ipo -march=core-avx2 -no-prec-div`

Peak Optimization Flags

C benchmarks:

122.tachyon: `basepeak = yes`

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Peak Optimization Flags (Continued)

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

You can also download the XML flags sources by saving the following links:
http://www.spec.org/mpi2007/flags/AMD_flags.xml
http://www.spec.org/mpi2007/flags/Lenovo_Platform_Flags.xml

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

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