SPEC® MPIL2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Lenovo Global Technology

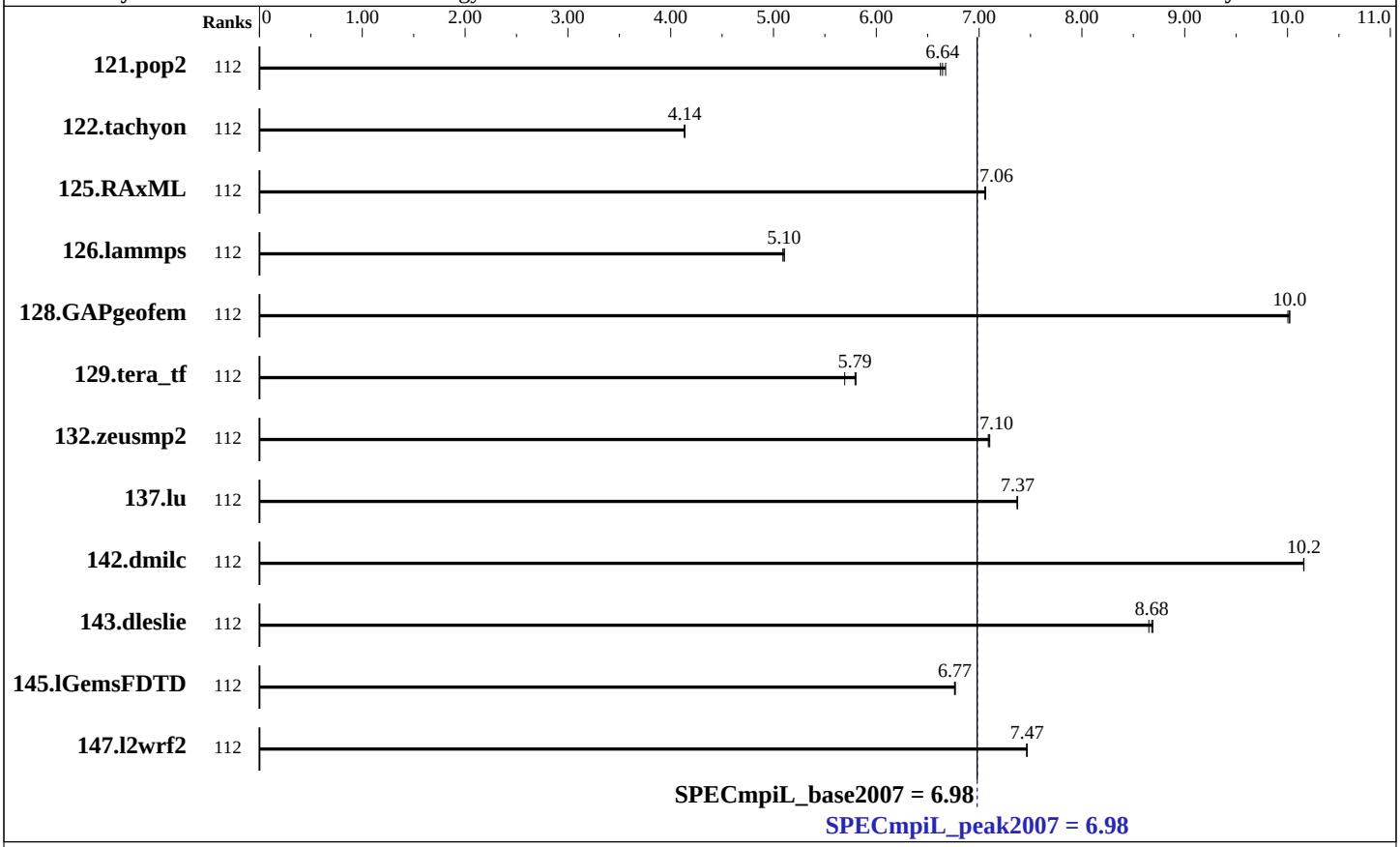
ThinkSystem SR860 V2
(Intel Xeon Platinum 8380H CPU, 2.90 GHz)

SPECmpiL_peak2007 = 6.98

SPECmpiL_base2007 = 6.98

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

Test date: Oct-2020
Hardware Availability: Oct-2020
Software Availability: Oct-2020



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
121.pop2	112	583	6.67	**586**	**6.64**	587	6.62	112	583	6.67	**586**	**6.64**	587	6.62
122.tachyon	112	**470**	**4.14**	470	4.14	470	4.13	112	**470**	**4.14**	470	4.14	470	4.13
125.RAxML	112	**414**	**7.06**	413	7.06	414	7.06	112	**414**	**7.06**	413	7.06	414	7.06
126.lammps	112	**482**	**5.10**	482	5.11	483	5.09	112	**482**	**5.10**	482	5.11	483	5.09
128.GAPgeofem	112	593	10.0	**592**	**10.0**	592	10.0	112	593	10.0	**592**	**10.0**	592	10.0
129.tera_tf	112	**190**	**5.79**	193	5.69	189	5.80	112	**190**	**5.79**	193	5.69	189	5.80
132.zeusmp2	112	298	7.10	**299**	**7.10**	299	7.09	112	298	7.10	**299**	**7.10**	299	7.09
137.lu	112	570	7.38	570	7.37	**570**	**7.37**	112	570	7.38	570	7.37	**570**	**7.37**
142.dmilc	112	**363**	**10.2**	363	10.2	363	10.2	112	**363**	**10.2**	363	10.2	363	10.2
143.dleslie	112	358	8.65	**357**	**8.68**	357	8.69	112	358	8.65	**357**	**8.68**	357	8.69
145.lGemsFDTD	112	652	6.77	652	6.76	**652**	**6.77**	112	652	6.77	652	6.76	**652**	**6.77**
147.l2wrf2	112	1099	7.47	**1099**	**7.47**	1099	7.46	112	1099	7.47	**1099**	**7.47**	1099	7.46

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

SPEC MPIL2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR860 V2
(Intel Xeon Platinum 8380H CPU, 2.90 GHz)

SPECmpiL_peak2007 = 6.98

SPECmpiL_base2007 = 6.98

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

Test date: Oct-2020
Hardware Availability: Oct-2020
Software Availability: Oct-2020

Hardware Summary

Type of System:	Homogeneous
Compute Node:	ThinkSystem SR860 V2
Interconnect:	Nvidia Mellanox ConnectX-6 HDR Infiniband
File Server Node:	NFS
Total Compute Nodes:	1
Total Chips:	4
Total Cores:	112
Total Threads:	112
Total Memory:	1536 GB
Base Ranks Run:	112
Minimum Peak Ranks:	112
Maximum Peak Ranks:	112

Software Summary

C Compiler:	Intel Parallel Studio C Compiler 20 Update 2 for Linux Version 19.1.2.254 Build 20200623
C++ Compiler:	Intel Parallel Studio C++ Compiler 20 Update 2 for Linux Version 19.1.2.254 Build 20200623
Fortran Compiler:	Intel Parallel Studio Fortran Compiler 20 Update 2 for Linux Version 19.1.2.254 Build 20200623
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
MPI Library:	Intel Parallel Studio MPI Library for Linux* OS Version 2020 Update 2 Build 20200624
Other MPI Info:	None
Pre-processors:	No
Other Software:	None

Node Description: ThinkSystem SR860 V2

Hardware

Number of nodes:	1
Uses of the node:	compute
Vendor:	Lenovo Global Technology
Model:	ThinkSystem SR860 V2
CPU Name:	Intel Xeon Platinum 8380H
CPU(s) orderable:	2,4 chips
Chips enabled:	4
Cores enabled:	112
Cores per chip:	28
Threads per core:	1
CPU Characteristics:	Intel Turbo Boost Technology up to 4.3 GHz
CPU MHz:	2900
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
Other Cache:	None
Memory:	1536 GB (48 x 32 GB 2Rx8 PC4-3200AA-R)
Disk Subsystem:	1 x 1 TB SATA 2.5" SSD
Other Hardware:	N/A
Adapter:	Nvidia Mellanox ConnectX-6 HDR Infiniband
Number of Adapters:	1
Slot Type:	PCI-Express 3.0 x16
Data Rate:	200 Gb/s
Ports Used:	1
Interconnect Type:	Nvidia Mellanox ConnectX-6 HDR Infiniband

Software

Adapter:	Nvidia Mellanox ConnectX-6 HDR Infiniband
Adapter Driver:	5.1-0.6.6
Adapter Firmware:	20.25.2006
Operating System:	SUSE Linux Enterprise Server 15 SP2 5.3.18-22-default
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 SR860 V2
CPU Name:	Intel Xeon Platinum 8380H
CPU(s) orderable:	2,4 chips
Chips enabled:	4
Cores enabled:	112
Cores per chip:	28
Threads per core:	1
CPU Characteristics:	Intel Turbo Boost Technology up to 4.3 GHz
CPU MHz:	2900
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
Other Cache:	None
Memory:	1536 GB (48 x 32 GB 2Rx8 PC4-3200AA-R)
Disk Subsystem:	1 x 1 TB SATA 2.5" SSD
Other Hardware:	None
Adapter:	Nvidia Mellanox ConnectX-6 HDR Infiniband
Number of Adapters:	1
Slot Type:	PCI-Express 3.0 x16
Data Rate:	200 Gb/s
Ports Used:	1
Interconnect Type:	Nvidia Mellanox ConnectX-6 HDR Infiniband

Software

Adapter:	Nvidia Mellanox ConnectX-6 HDR Infiniband
Adapter Driver:	5.1-0.6.6
Adapter Firmware:	20.25.2006
Operating System:	SUSE Linux Enterprise Server 15 SP2
Local File System:	None
Shared File System:	NFS
System State:	Multi-User, run level 3
Other Software:	None

Interconnect Description: Nvidia Mellanox ConnectX-6 HDR Infiniband

Hardware

Vendor:	Nvidia
Model:	Nvidia Mellanox ConnectX-6 HDR Infiniband
Switch Model:	Nvidia Mellanox QM8700
Number of Switches:	1
Number of Ports:	40
Data Rate:	200 Gb/s
Firmware:	3.9.0606
Topology:	Mesh
Primary Use:	MPI and I/O 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.

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.
```

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 -xCORE-AVX512 -no-prec-div`

Continued on next page

Base Optimization Flags (Continued)

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`

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/EM64T_Intel121_flags.20201007.html`
`http://www.spec.org/mpi2007/flags/Lenovo-SPECmpiM_Platform_Flags.html`

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

http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20201007.xml
http://www.spec.org/mpi2007/flags/Lenovo-SPECmpiM_Platform_Flags.xml

SPEC and SPEC MPI are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC MPI2007 v2.0.1.
Report generated on Wed Nov 4 16:31:47 2020 by SPEC MPI2007 PS/PDF formatter v1463.
Originally published on 4 November 2020.