SPEC® MPIL2007 Result

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Lenovo Global Technology

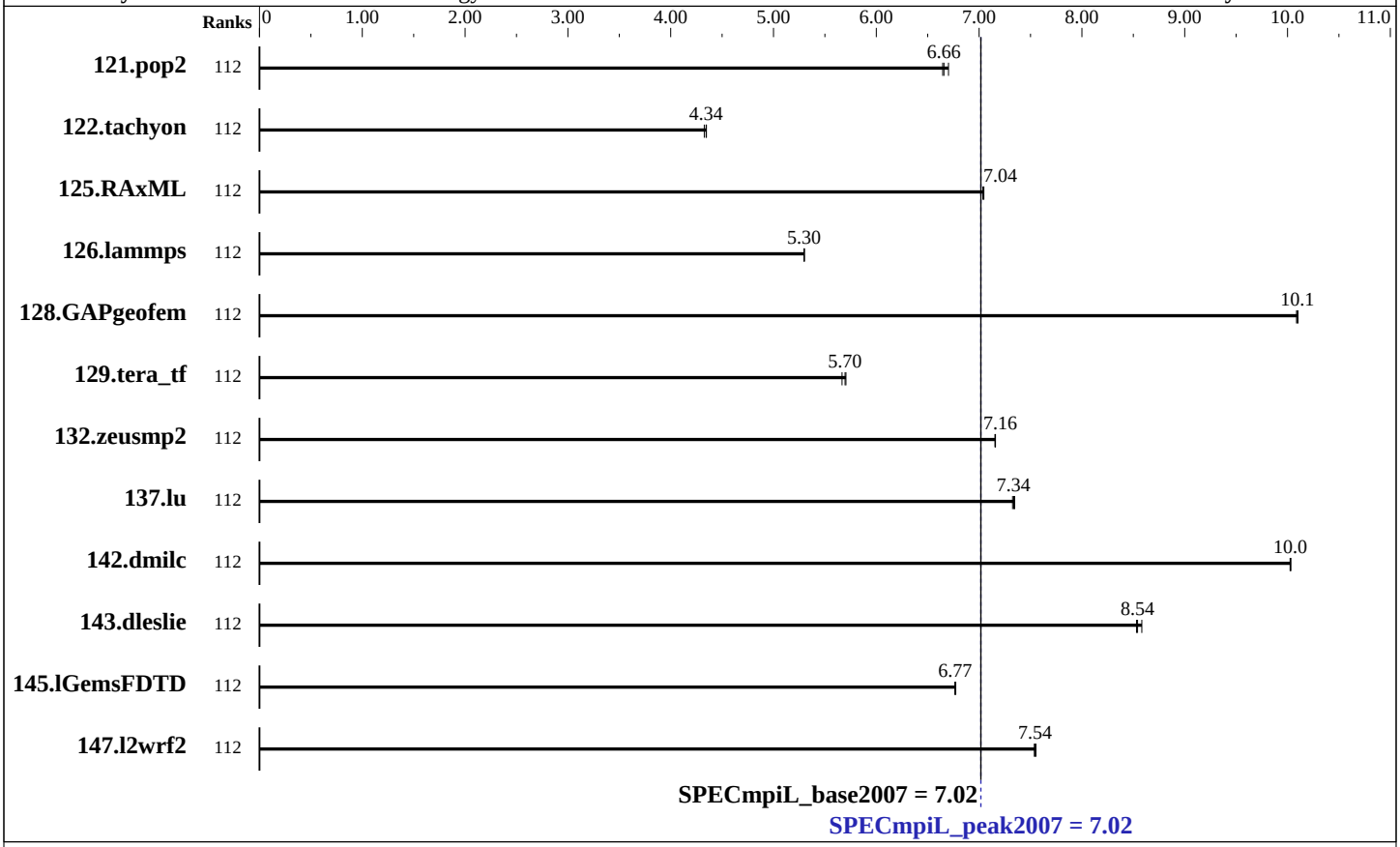
ThinkSystem SR860 V2
(Intel Xeon Platinum 8380H CPU, 2.90 GHz)

SPECmpiL_peak2007 = 7.02

SPECmpiL_base2007 = 7.02

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

Test date: Aug-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	**584**	**6.66**	585	6.65	581	6.70	112	**584**	**6.66**	585	6.65	581	6.70
122.tachyon	112	449	4.33	**447**	**4.34**	447	4.35	112	449	4.33	**447**	**4.34**	447	4.35
125.RAxML	112	**415**	**7.04**	415	7.04	414	7.05	112	**415**	**7.04**	415	7.04	414	7.05
126.lammps	112	464	5.30	**464**	**5.30**	464	5.30	112	464	5.30	**464**	**5.30**	464	5.30
128.GAPgeofem	112	587	10.1	588	10.1	**588**	**10.1**	112	587	10.1	588	10.1	**588**	**10.1**
129.tera_tf	112	**193**	**5.70**	194	5.67	193	5.70	112	**193**	**5.70**	194	5.67	193	5.70
132.zeusmp2	112	**296**	**7.16**	296	7.16	296	7.15	112	**296**	**7.16**	296	7.16	296	7.15
137.lu	112	**573**	**7.34**	574	7.33	572	7.35	112	**573**	**7.34**	574	7.33	572	7.35
142.dmilc	112	367	10.0	367	10.0	**367**	**10.0**	112	367	10.0	367	10.0	**367**	**10.0**
143.dleslie	112	363	8.53	361	8.58	**363**	**8.54**	112	363	8.53	361	8.58	**363**	**8.54**
145.lGemsFDTD	112	**652**	**6.77**	652	6.76	651	6.77	112	**652**	**6.77**	652	6.76	651	6.77
147.l2wrf2	112	**1087**	**7.54**	1086	7.55	1089	7.54	112	**1087**	**7.54**	1086	7.55	1089	7.54

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

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Software Availability: Oct-2020

Hardware Summary

Type of System:	Homogeneous
Compute Node:	ThinkSystem SR860 V2
Interconnect:	Intel Omni-Path
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 C++ Compiler 2020 Update 1 for Linux Version 19.1.1.217 Build 20200306
C++ Compiler:	Intel C++ Compiler 2020 Update 1 for Linux Version 19.1.1.217 Build 20200306
Fortran Compiler:	Intel Fortran Compiler 2020 Update 1 for Linux Version 19.1.1.217 Build 20200306
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
MPI Library:	Intel MPI Library for Linux* OS Version 2019 Update 7 Build 20200312
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:	None
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)
Disk Subsystem:	1 x 1 TB SATA 2.5" SSD
Other Hardware:	N/A
Adapter:	Intel Omni-Path Fabric Adapter 100 Series
Number of Adapters:	1
Slot Type:	PCI-Express 3.0 x16
Data Rate:	100 Gb/s
Ports Used:	1
Interconnect Type:	Intel Omni-Path

Software

Adapter:	Intel Omni-Path Fabric Adapter 100 Series
Adapter Driver:	10.10.2.0.46
Adapter Firmware:	10.4.0.0.146
Operating System:	Red Hat Enterprise Linux Server release 8.2, Kernel 4.18.0-193.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

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Software

Adapter:	Intel Omni-Path Fabric Adapter 100 Series
Adapter Driver:	10.10.2.0.46

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MPI2007 license: 28
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Tested by: Lenovo Global Technology

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

Node Description: NFS

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:	None
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:	Intel Omni-Path Fabric Adapter 100 Series
Number of Adapters:	1
Slot Type:	PCI-Express 3.0 x16
Data Rate:	100 Gb/s
Ports Used:	1
Interconnect Type:	Intel Omni-Path

Adapter Firmware:	10.4.0.0.146
Operating System:	Red Hat Enterprise Linux Server release 7.8
Local File System:	None
Shared File System:	NFS
System State:	Multi-User, run level 3
Other Software:	None

Interconnect Description: Intel Omni-Path

Hardware

Vendor:	Intel
Model:	Intel Omni-Path Fabric Adapter 100 Series
Switch Model:	Intel Omni-Path 100 Series
Number of Switches:	1
Number of Ports:	48
Data Rate:	100 Gb/s
Firmware:	10.3.0.0.60
Topology:	Mesh
Primary Use:	MPI 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:
```

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General Notes (Continued)

```
    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`

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`

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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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