# SPEC® MPIM2007 Result

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## Lenovo Global Technology

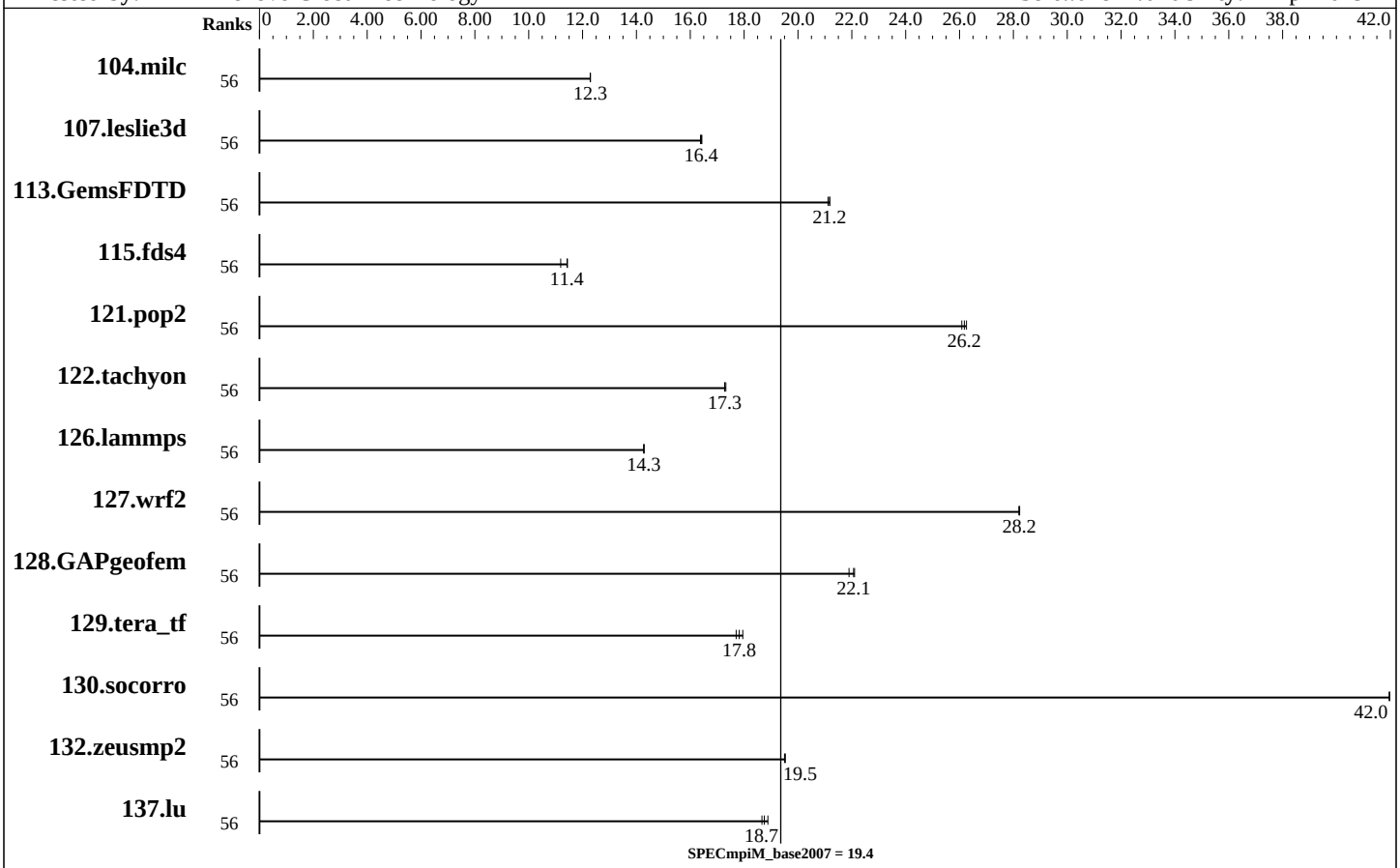
ThinkSystem SR650
(Intel Xeon Platinum 8280 CPU, 2.70 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 19.4

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

**Test date:** Apr-2019
**Hardware Availability:** Apr-2019
**Software Availability:** Apr-2019




## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ranks | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Ranks | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 104.milc | 56 | 127 | 12.3 | **127** | **12.3** | 127 | 12.3 | | | | | | | |
| 107.leslie3d | 56 | 318 | 16.4 | **318** | **16.4** | 319 | 16.4 | | | | | | | |
| 113.GemsFDTD | 56 | **298** | **21.2** | 298 | 21.2 | 299 | 21.1 | | | | | | | |
| 115.fds4 | 56 | 171 | 11.4 | **171** | **11.4** | 174 | 11.2 | | | | | | | |
| 121.pop2 | 56 | 157 | 26.3 | **158** | **26.2** | 158 | 26.1 | | | | | | | |
| 122.tachyon | 56 | 161 | 17.3 | 162 | 17.3 | **162** | **17.3** | | | | | | | |
| 126.lammps | 56 | 204 | 14.3 | 204 | 14.3 | **204** | **14.3** | | | | | | | |
| 127.wrf2 | 56 | 276 | 28.2 | 276 | 28.2 | **276** | **28.2** | | | | | | | |
| 128.GAPgeofem | 56 | 94.3 | 21.9 | 93.4 | 22.1 | **93.6** | **22.1** | | | | | | | |
| 129.tera_tf | 56 | 154 | 18.0 | 156 | 17.7 | **155** | **17.8** | | | | | | | |

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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## Results Table (Continued)

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ranks | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Ranks | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 130.socorro | 56 | **91.0** | **42.0** | 91.0 | 42.0 | 90.9 | 42.0 | | | | | | | |
| 132.zeusmp2 | 56 | **159** | **19.5** | 159 | 19.5 | 159 | 19.5 | | | | | | | |
| 137.lu | 56 | **196** | **18.7** | 195 | 18.9 | 197 | 18.7 | | | | | | | |

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

### Hardware Summary

Type of System: Homogeneous
Compute Node: ThinkSystem SR650
Interconnect: N/A
Total Compute Nodes: 1
Total Chips: 2
Total Cores: 56
Total Threads: 56
Total Memory: 768 GB
Base Ranks Run: 56
Minimum Peak Ranks: --
Maximum Peak Ranks: --

### Software Summary

C Compiler: Intel C++ Compiler 17.0 Update 7 for Linux Version 17.0.7 Build 20180403
C++ Compiler: Intel C++ Compiler 17.0 Update 7 for Linux Version 17.0.7 Build 20180403
Fortran Compiler: Intel Fortran Compiler 17.0 Update 7 for Linux Version 17.0.7 Build 20180403
Base Pointers: 64-bit
Peak Pointers: Not Applicable
MPI Library: Intel MPI Library for Linux* OS Version 2018 Update 3 Build 20180411
Other MPI Info: None
Pre-processors: No
Other Software: None

## Node Description: ThinkSystem SR650

### Hardware

Number of nodes: 1
Uses of the node: compute
Vendor: Lenovo Global Technology
Model: SR650
CPU Name: Intel Xeon Platinum 8280
CPU(s) orderable: 1-2 chips
Chips enabled: 2
Cores enabled: 56
Cores per chip: 28
Threads per core: 1
CPU Characteristics: None
CPU MHz: 2700
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 1 MB I+D on chip per core
L3 Cache: 38.5 MB I+D on chip per chip shared / 28 cores
Other Cache: None
Memory: 768 GB (24 x 32 GB 2Rx4 PC4-2933Y-R)
Disk Subsystem: 1 x 1 TB 12 Gbps SAS 2.5" SSD (JBOD)
Other Hardware: ThinkSystem RAID 930-8i 2GB Flash Adapter
Adapter: N/A
Number of Adapters: 0
Slot Type: N/A
Data Rate: N/A

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### Software

Adapter: N/A
Adapter Driver: N/A
Adapter Firmware: N/A
Operating System: SUSE Linux Enterprise Server 12 SP4 4.12.14-94.41-default
Local File System: xfs
Shared File System: None
System State: Multi-user, run level 3
Other Software: None

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## Node Description: ThinkSystem SR650

| | |
|---|---|
| Ports Used: | 0 |
| Interconnect Type: | None |

## Interconnect Description: N/A

### Hardware

| | |
|---|---|
| Vendor: | N/A |
| Model: | N/A |
| Switch Model: | N/A |
| Number of Switches: | 0 |
| Number of Ports: | 0 |
| Data Rate: | N/A |
| Firmware: | N/A |
| Topology: | N/A |
| Primary Use: | N/A |

### 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`
127.wrf2: `-DSPEC_MPI_CASE_FLAG -DSPEC_MPI_LINUX`
130.socorro: `-assume nostd_intent_in`

## 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`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20170711.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20170711.xml`

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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 May 22 18:15:15 2019 by SPEC MPI2007 PS/PDF formatter v1463.
Originally published on 22 May 2019.