Lenovo Global Technology  
ThinkSystem SR950  
(Intel Xeon Platinum 8280L CPU, 2.70 GHz)

**SPECmpiM_peak2007 = Not Run**

**SPECmpiM_base2007 = 49.7**

**MPI2007 license:** 28  
**Test date:** Mar-2019  
**Test sponsor:** Lenovo Global Technology  
**Hardware Availability:** Apr-2019  
**Tested by:** Lenovo Global Technology  
**Software Availability:** Apr-2019

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### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Base Seconds</th>
<th>Ratio</th>
<th>Peak Seconds</th>
<th>Ratio</th>
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</thead>
<tbody>
<tr>
<td>104.milc</td>
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<td>47.6</td>
<td>32.9</td>
<td>47.5</td>
<td>33.0</td>
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<tr>
<td>107.leslie3d</td>
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<td>120</td>
<td>43.6</td>
<td>119</td>
<td>43.7</td>
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<tr>
<td>113.GemsFDTD</td>
<td>168</td>
<td>140</td>
<td>44.9</td>
<td>140</td>
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<td>115 fds4</td>
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<td>50.3</td>
<td>38.8</td>
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<tr>
<td>121.pop2</td>
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<td>114</td>
<td>36.3</td>
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<td>36.4</td>
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<tr>
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<td>50.6</td>
<td>55.3</td>
<td>50.6</td>
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<tr>
<td>126.lammps</td>
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<td>84.2</td>
<td>34.6</td>
<td>84.0</td>
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<tr>
<td>127.wrf2</td>
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<td>81.5</td>
<td>95.7</td>
<td>81.4</td>
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<tr>
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<td>30.9</td>
<td>66.8</td>
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<tr>
<td>129.tera_tf</td>
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<td>61.3</td>
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<td>60.5</td>
<td>45.8</td>
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</tbody>
</table>

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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SPECMPIM_peak2007 = Not Run
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MPI2007 license: 28
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Results Table (Continued)

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<tr>
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<th>Ranks</th>
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<th>Ratio</th>
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</tr>
</thead>
<tbody>
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<tr>
<td>137.lu</td>
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<td>47.3</td>
<td>77.8</td>
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<td>47.1</td>
<td>78.0</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

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 SR950
Interconnect: N/A
Total Compute Nodes: 1
Total Chips: 6
Total Cores: 168
Total Threads: 168
Total Memory: 1152 GB
Base Ranks Run: 168
Minimum Peak Ranks: --
Maximum Peak Ranks: --

Software Summary
C Compiler: Intel C++ Compiler 18.0 Update 3 for Linux
Version 18.0.3 Build 20180410
C++ Compiler: Intel C++ Compiler 18.0 Update 3 for Linux
Version 18.0.3 Build 20180410
Fortran Compiler: Intel Fortran Compiler 18.0 Update 3 for Linux
Version 18.0.3 Build 20180410
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 SR950

Hardware
Number of nodes: 1
Uses of the node: compute
Vendor: Lenovo Global Technology
Model: SR950
CPU Name: Intel Xeon Platinum 8280L
CPU(s) orderable: 2,3,4,6,8 chips
Chips enabled: 6
Cores enabled: 168
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
Other Cache: None
Memory: 1152 GB (72 x 16 GB 2Rx8 PC4-2933Y-R)
Disk Subsystem: 1 x 1 TB NVMe 2.5" SSD
Other Hardware: N/A
Adapter: N/A
Number of Adapters: 0
Slot Type: N/A
Data Rate: N/A
Ports Used: 0

Software
Adapter: N/A
Adapter Driver: N/A
Adapter Firmware: N/A
Operating System: Red Hat Enterprise Linux Server release 7.6,
Kernel 3.10.0-957.el7.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: Apr-2019

Node Description: ThinkSystem SR950
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 16 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.
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**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.scorro: -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 files that were used to format this result can be browsed at
http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20170711.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.20170711.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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