### Lenovo Global Technology

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

**SPECmpiM_peak2007** = 39.8  
**SPECmpiM_base2007** = 39.8

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>104.milc</td>
<td>112</td>
<td>66.1</td>
<td>23.7</td>
<td>66.0</td>
<td>23.7</td>
<td>66.1</td>
<td>23.7</td>
<td>66.1</td>
<td>23.7</td>
</tr>
<tr>
<td>107.leslie3d</td>
<td>112</td>
<td>156</td>
<td>33.4</td>
<td>156</td>
<td>33.5</td>
<td>156</td>
<td>33.4</td>
<td>156</td>
<td>33.4</td>
</tr>
<tr>
<td>113.GemFDTD</td>
<td>112</td>
<td>147</td>
<td>43.0</td>
<td>147</td>
<td>42.9</td>
<td>147</td>
<td>42.9</td>
<td>147</td>
<td>43.1</td>
</tr>
<tr>
<td>115.fds4</td>
<td>112</td>
<td>67.5</td>
<td>28.9</td>
<td>67.5</td>
<td>28.9</td>
<td>67.5</td>
<td>28.9</td>
<td>67.5</td>
<td>28.9</td>
</tr>
<tr>
<td>121.pop2</td>
<td>112</td>
<td>109</td>
<td>37.7</td>
<td>109</td>
<td>37.9</td>
<td>109</td>
<td>37.9</td>
<td>109</td>
<td>37.9</td>
</tr>
<tr>
<td>122.tachyon</td>
<td>112</td>
<td>74.3</td>
<td>37.6</td>
<td>74.6</td>
<td>37.5</td>
<td>74.4</td>
<td>37.6</td>
<td>74.4</td>
<td>37.6</td>
</tr>
<tr>
<td>126.lammps</td>
<td>112</td>
<td>94.8</td>
<td>30.7</td>
<td>95.0</td>
<td>30.7</td>
<td>95.1</td>
<td>30.7</td>
<td>95.1</td>
<td>30.7</td>
</tr>
<tr>
<td>127.wrf2</td>
<td>112</td>
<td>124</td>
<td>62.8</td>
<td>125</td>
<td>62.6</td>
<td>124</td>
<td>62.8</td>
<td>125</td>
<td>62.8</td>
</tr>
<tr>
<td>128.GAPgeofem</td>
<td>112</td>
<td>42.0</td>
<td>49.2</td>
<td>41.7</td>
<td>49.5</td>
<td>41.8</td>
<td>49.3</td>
<td>41.8</td>
<td>49.3</td>
</tr>
<tr>
<td>129.tera_tf</td>
<td>112</td>
<td>77.6</td>
<td>35.7</td>
<td>77.7</td>
<td>35.6</td>
<td>78.0</td>
<td>35.5</td>
<td>78.0</td>
<td>35.5</td>
</tr>
</tbody>
</table>

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.
SPEC MpiM2007 Result

Lenovo Global Technology

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

SPECmpiM_peak2007 = 39.8
SPECmpiM_base2007 = 39.8

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

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 Nvidia Mellanox ConnectX-6 HDR Infiniband
Number of Adapters: 1

Software

Adapter: Nvidia 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
Version 5.3.18-22-default
Local File System: xfs
Shared File System: None
System State: Multi-user, run level 3
Other Software: None

Results Table (Continued)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>63.7</td>
<td>59.9</td>
<td>63.6</td>
<td>60.0</td>
<td>63.3</td>
<td>60.3</td>
<td>112</td>
<td>63.7</td>
<td>59.9</td>
<td>63.6</td>
<td>60.0</td>
<td>63.3</td>
<td>60.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>76.0</td>
<td>40.8</td>
<td>76.0</td>
<td>40.9</td>
<td>76.0</td>
<td>40.8</td>
<td>112</td>
<td>76.0</td>
<td>40.8</td>
<td>76.0</td>
<td>40.9</td>
<td>76.0</td>
<td>40.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>68.6</td>
<td>53.6</td>
<td>70.3</td>
<td>52.3</td>
<td>68.6</td>
<td>53.6</td>
<td>112</td>
<td>68.6</td>
<td>53.6</td>
<td>70.3</td>
<td>52.3</td>
<td>68.6</td>
<td>53.6</td>
<td></td>
</tr>
<tr>
<td>Peak</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Continued on next page
**SPEC MPIM2007 Result**

**Lenovo Global Technology**
ThinkSystem SR860 V2
(Intel Xeon Platinum 8380H CPU, 2.90 GHz)

<table>
<thead>
<tr>
<th>SPECmpiM_peak2007</th>
<th>SPECmpiM_base2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>39.8</td>
<td>39.8</td>
</tr>
</tbody>
</table>

**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  

**Node Description: ThinkSystem SR860 V2**

<table>
<thead>
<tr>
<th>Slot Type</th>
<th>PCI-Express 3.0 x16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Rate</td>
<td>200 Gb/s</td>
</tr>
<tr>
<td>Ports Used</td>
<td>1</td>
</tr>
<tr>
<td>Interconnect Type</td>
<td>Nvidia Mellanox ConnectX-6 HDR Infiniband</td>
</tr>
</tbody>
</table>

**Node Description: NFS**

| 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 L1 + 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 Series |
| Slot Type       | PCI-Express 3.0 x16 |
| Data Rate       | 200 Gb/s |
| Ports Used      | 1 |
| Interconnect Type | Nvidia Mellanox ConnectX-6 |

**Interconnect Description: Nvidia Mellanox ConnectX-6 HDR Infiniband**

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Nvidia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Nvidia Mellanox ConnectX-6 HDR Infiniband</td>
</tr>
<tr>
<td>Switch Model</td>
<td>Nvidia Mellanox QM8700</td>
</tr>
<tr>
<td>Number of Switches</td>
<td>1</td>
</tr>
<tr>
<td>Number of Ports</td>
<td>40</td>
</tr>
<tr>
<td>Data Rate</td>
<td>200 Gb/s</td>
</tr>
<tr>
<td>Firmware</td>
<td>3.9.0606</td>
</tr>
<tr>
<td>Topology</td>
<td>Mesh</td>
</tr>
</tbody>
</table>

Continued on next page
Lenovo Global Technology
ThinkSystem SR860 V2
(Intel Xeon Platinum 8380H CPU, 2.90 GHz)

SPECmpiM_peak2007 = 39.8
SPECmpiM_base2007 = 39.8

Interconnect Description: Nvidia Mellanox ConnectX-6 HDR Infiniband
Primary Use: MPI and I/O traffic

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

SPECmpiM_peak2007 = 39.8
SPECmpiM_base2007 = 39.8

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

Peak Optimization Flags

C benchmarks:

104.milc: basepeak = yes
122.tachyon: basepeak = yes

C++ benchmarks:

126.lammps: basepeak = yes

Fortran benchmarks:

107.leslie3d: basepeak = yes
113.GemsFDTD: basepeak = yes
129.tera_tf: basepeak = yes
137.lu: basepeak = yes

Benchmarks using both Fortran and C:
115.fds4: basepeak = yes

Continued on next page
Lenovo Global Technology
ThinkSystem SR860 V2
(Intel Xeon Platinum 8380H CPU, 2.90 GHz)

SPECmpiM_peak2007 = 39.8
SPECmpiM_base2007 = 39.8

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

Peak Optimization Flags (Continued)

121.pop2: basepeak = yes
127.wrf2: basepeak = yes
128.GAPgeofem: basepeak = yes
130.socorro: basepeak = yes
132.zeusmp2: 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.
Originally published on 4 November 2020.