**Lenovo Global Technology**

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

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<tr>
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<th>Base</th>
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<td>278</td>
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<td>29.8</td>
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</tbody>
</table>

Results Table

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

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

### SPECmpilpeak2007 = 28.1  
SPECmpil_base2007 = 28.1

**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:** 4  
- **Total Chips:** 16  
- **Total Cores:** 448  
- **Total Threads:** 448  
- **Total Memory:** 6 TB  
- **Base Ranks Run:** 448  
- **Minimum Peak Ranks:** 448  
- **Maximum Peak Ranks:** 448

### 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:** 4  
- **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  
  5.1-0.6.6  
- **Adapter Driver:** 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
### Lenovo Global Technology
**ThinkSystem SR860 V2**
(Intel Xeon Platinum 8380H CPU, 2.90 GHz)

<table>
<thead>
<tr>
<th>SPECmpiL_peak2007 =</th>
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</thead>
<tbody>
<tr>
<td>SPECmpiL_base2007 =</td>
<td>28.1</td>
</tr>
</tbody>
</table>

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

**Node Description: NFS**

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of nodes: 1</td>
<td>Adapter: Nvidia Mellanox ConnectX-6 HDR Infiniband</td>
</tr>
<tr>
<td>Uses of the node: Fileserver</td>
<td>Adapter Driver: 5.1-0.6.6</td>
</tr>
<tr>
<td>Vendor: Lenovo Global Technology</td>
<td>Adapter Firmware: 20.25.2006</td>
</tr>
<tr>
<td>Model: ThinkSystem SR860 V2</td>
<td>Operating System: SUSE Linux Enterprise Server 15 SP2</td>
</tr>
<tr>
<td>CPU Name: Intel Xeon Platinum 8380H</td>
<td>Local File System: None</td>
</tr>
<tr>
<td>CPU(s) orderable: 2.4 chips</td>
<td>Shared File System: NFS</td>
</tr>
<tr>
<td>Chips enabled: 4</td>
<td>System State: Multi-User, run level 3</td>
</tr>
<tr>
<td>Cores enabled: 112</td>
<td>Other Software: None</td>
</tr>
<tr>
<td>Cores per chip: 28</td>
<td>Other Hardware: None</td>
</tr>
<tr>
<td>Threads per core: 1</td>
<td><strong>Interconnect Description: Nvidia Mellanox ConnectX-6 HDR Infiniband</strong></td>
</tr>
<tr>
<td>CPU Characteristics: Intel Turbo Boost Technology up to 4.3 GHz</td>
<td>Hardware</td>
</tr>
<tr>
<td>CPU MHz: 2900</td>
<td>Vendor: Nvidia</td>
</tr>
<tr>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
<td>Model: Nvidia Mellanox ConnectX-6 HDR Infiniband</td>
</tr>
<tr>
<td>Secondary Cache: 1 MB I+D on chip per core</td>
<td>Switch Model: Nvidia Mellanox QM8700</td>
</tr>
<tr>
<td>L3 Cache: 39424 KB I+D on chip per chip</td>
<td>Number of Switches: 1</td>
</tr>
<tr>
<td>Other Cache: None</td>
<td>Number of Ports: 40</td>
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<td>Memory: 1536 GB (48 x 32 GB 2Rx8 PC4-3200AA-R)</td>
<td>Data Rate: 200 Gb/s</td>
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<tr>
<td>Disk Subsystem: 1 x 1 TB SATA 2.5” SSD</td>
<td>Firmware: 3.9.0606</td>
</tr>
<tr>
<td>Other Hardware: None</td>
<td>Topology: Mesh</td>
</tr>
<tr>
<td>Adapter: Nvidia Mellanox ConnectX-6 HDR Infiniband</td>
<td>Primary Use: MPI and I/O traffic</td>
</tr>
<tr>
<td>Number of Adapters: 1</td>
<td>Submit Notes</td>
</tr>
<tr>
<td>Slot Type: PCI-Express 3.0 x16</td>
<td>The config file option 'submit' was used.</td>
</tr>
<tr>
<td>Data Rate: 200 Gb/s</td>
<td>Ports Used: 1</td>
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</tbody>
</table>

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Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/
Lenovo Global Technology
ThinkSystem SR860 V2
(Intel Xeon Platinum 8380H CPU, 2.90 GHz)

SPECmpiL_peak2007 = 28.1
SPECmpiL_base2007 = 28.1

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

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_CXXSEEK

Base Optimization Flags

C benchmarks:
   -O3 -ipo -xCORE-AVX512 -no-prec-div

Continued on next page
Lenovo Global Technology
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| SPECmpiL_peak2007 = 28.1 |
| SPECmpiL_base2007 = 28.1 |

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**Test sponsor:** Lenovo Global Technology  
**Hardware Availability:** Oct-2020  
**Tested by:** Lenovo Global Technology  
**Software Availability:** Oct-2020  

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**Base Optimization Flags (Continued)**

C++ benchmarks:
```
126.lammps: -O3 -ipo -xCORE-AVX512 -no-prec-div
```

Fortran benchmarks:
```
-03 -ipo -xCORE-AVX512 -no-prec-div
```

Benchmarks using both Fortran and C:
```
-03 -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/EM64T_Intel121_flags.20201007.html)
<table>
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You can also download the XML flags sources by saving the following links:

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