# Lenovo Global Technology

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

| SPECmpiM_peak2007 | 101 | SPECmpiM_base2007 | 99.3 |

## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Ranks</th>
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<th>Peak</th>
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Table continues on next page. 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*)

**SPECmpimM_peak2007 = 101**  
**SPECmpimM_base2007 = 99.3**

<table>
<thead>
<tr>
<th><strong>MPI2007 license:</strong></th>
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<tr>
<td><strong>Test sponsor:</strong></td>
<td>Lenovo Global Technology</td>
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<tr>
<td><strong>Tested by:</strong></td>
<td>Lenovo Global Technology</td>
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<td><strong>Test date:</strong></td>
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<td><strong>Hardware Availability:</strong></td>
<td>Oct-2020</td>
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<td><strong>Software Availability:</strong></td>
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#### Results Table (Continued)

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</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
- **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:** 224
- **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

#### Software

- **Adapter:** 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  
  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
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SPECMpiM_peak2007 = 101
SPECMpiM_base2007 = 99.3

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

Slot Type: PCI-Express 3.0 x16
Data Rate: 200 Gb/s
Ports Used: 1
Interconnect Type: Nvidia Mellanox ConnectX-6 HDR Infiniband

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 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

Interconnect Description: Nvidia Mellanox ConnectX-6 HDR Infiniband

Vendor: Nvidia
Model: Nvidia Mellanox ConnectX-6 HDR Infiniband
Switch Model: Nvidia Mellanox QM8700
Number of Switches: 1
Number of Ports: 40
Data Rate: 200 Gb/s
Firmware: 3.9.0606
Topology: Mesh

System State: Multi-User, run level 3
Other Software: None

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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

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.

Compiler Invocation

C benchmarks: 
  mpiicc

C++ benchmarks: 
  126.lammps: mpiicpc

Fortran benchmarks: 
  mpiifort

Benchmarks using both Fortran and C: 
  mpiicc mpiifort
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SPECmpiM_peak2007 = 101
SPECmpiM_base2007 = 99.3

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:
-03 -ipo -xCORE-AVX512 -no-prec-div

C++ benchmarks:

126.lammps: -03 -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:

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

C++ benchmarks:

126.lammps: -03 -ipo -xCORE-AVX512 -no-prec-div

Fortran benchmarks:

107.leslie3d: basepeak = yes
113.GemsFDTD: -03 -ipo -xCORE-AVX512 -no-prec-div
129.tera_tf: basepeak = yes
137.lu: basepeak = yes

Benchmarks using both Fortran and C:

115.fds4: basepeak = yes

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

**Peak Optimization Flags (Continued)**

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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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