**Lenovo Global Technology**

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

**SPECmpiM_peak2007** = 40.4

**SPECmpiM_base2007** = 40.4

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

Test date: Aug-2020
Hardware Availability: Oct-2020
Software Availability: Oct-2020

**Benchmark** | **Ranks** | **Base** | **Ratio** | **Peak** | **Ratio**
--- | --- | --- | --- | --- | ---
104.milc | 112 | 65.0 | 24.1 | 65.0 | 24.1
107.leslie3d | 112 | 158 | 33.1 | 158 | 33.1
113.GemsFDTD | 112 | 147 | 43.0 | 147 | 43.0
115.fds4 | 112 | 67.1 | 29.1 | 67.3 | 29.0
121.pop2 | 112 | 104 | 39.5 | 104 | 39.5
122.tachyon | 112 | 75.9 | 36.9 | 75.9 | 36.9
126.lammps | 112 | 97.9 | 39.8 | 98.0 | 39.7
127.wrf2 | 112 | 123 | 36.5 | 123 | 36.5
128.GAPgeofem | 112 | 42.3 | 48.8 | 42.1 | 49.0
129.tera_tf | 112 | 80.6 | 34.3 | 81.6 | 33.9
130.socorro | 112 | 80.6 | 34.3 | 81.6 | 33.9
132.zeusmp2 | 112 | 80.6 | 34.3 | 81.6 | 33.9
137.lu | 112 | 80.6 | 34.3 | 81.6 | 33.9

Results Table

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

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(Intel Xeon Platinum 8380H CPU, 2.90 GHz)

### SPECmpiM_peak2007 = 40.4

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**MPI2007 license:** 28  
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**Test date:** Aug-2020  
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### Results Table (Continued)

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<td>67.4</td>
<td>54.6</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 SR860 V2  
- **Interconnect:** Intel Omni-Path  
- **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 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 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:** None  
- **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  
- **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:** Intel Omni-Path Fabric Adapter 100 Series  
- **Number of Adapters:** 1  
- **Slot Type:** PCI-Express 3.0 x16  
- **Data Rate:** 100 Gb/s  
- **Ports Used:** 1  

#### Software

- **Adapter:** Intel Omni-Path Fabric Adapter 100 Series  
- **Adapter Driver:** 10.10.2.0.46  
- **Adapter Firmware:** 10.4.0.0.146  
- **Operating System:** Red Hat Enterprise Linux Server release 8.2, Kernel 4.18.0-193.el8.x86_64  
- **Local File System:** xfs  
- **Shared File System:** None  
- **System State:** Multi-user, run level 3  
- **Other Software:** None

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

| SPECmpiM_peak2007 | 40.4 |
| SPECmpiM_base2007 | 40.4 |

**MPI2007 license:** 28  
**Test sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology  
**Test date:** Aug-2020  
**Hardware Availability:** Oct-2020  
**Software Availability:** Oct-2020

### Node Description: ThinkSystem SR860 V2

- **Interconnect Type:** Intel Omni-Path

### Node Description: NFS

#### Hardware
- **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:** None
- **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)
- **Disk Subsystem:** 1 x 1 TB SATA 2.5" SSD
- **Other Hardware:** None

#### Software
- **Adapter:** Intel Omni-Path Fabric Adapter 100 Series
- **Adapter Driver:** 10.10.2.0.46
- **Adapter Firmware:** 10.4.0.0.146
- **Operating System:** Red Hat Enterprise Linux Server release 7.8
- **Local File System:** None
- **Shared File System:** NFS
- **System State:** Multi-User, run level 3
- **Other Software:** None

### Interconnect Description: Intel Omni-Path

#### Hardware
- **Vendor:** Intel
- **Model:** Intel Omni-Path Fabric Adapter 100 Series
- **Switch Model:** Intel Omni-Path 100 Series
- **Number of Switches:** 1
- **Number of Ports:** 48
- **Data Rate:** 100 Gb/s
- **Firmware:** 10.3.0.0.60
- **Topology:** Mesh
- **Primary Use:** MPI Traffic

#### Software
- **Adapter:** Intel Omni-Path Fabric Adapter 100 Series
- **Adapter Driver:** 10.10.2.0.46
- **Adapter Firmware:** 10.4.0.0.146
- **Operating System:** Red Hat Enterprise Linux Server release 7.8
- **Local File System:** None
- **Shared File System:** NFS
- **System State:** Multi-User, run level 3
- **Other Software:** None
# SPEC MPI 2007 Result

**Lenovo Global Technology**

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

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## 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
Lenovo Global Technology
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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:
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
121.pop2: basepeak = yes
127.wrf2: basepeak = yes
128.GAPgeoefem: basepeak = yes
130.socorro: basepeak = yes
132.zeusmp2: basepeak = yes
**SPEC MPI2007 Result**

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The flags files that were used to format this result can be browsed at:


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.  
Originally published on 13 October 2020.