# SPEC® MPI2007 Result

## Lenovo Global Technology

ThinkSystem SR650  
(Intel Xeon Platinum 8180 CPU, 2.50 GHz)

### SPECmpiM_peak2007 = Not Run

| SPECmpiM_base2007 = | 34.7 |

### MPI2007 license: 28

<table>
<thead>
<tr>
<th>Test date:</th>
<th>Aug-2018</th>
</tr>
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<tbody>
<tr>
<td>Test sponsor:</td>
<td>Lenovo Global Technology</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Lenovo Global Technology</td>
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<td>Hardware Availability:</td>
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### Results Table

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</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 SR650  
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**SPECmpiM_peak2007 = Not Run**  
**SPECmpiM_base2007 = 34.7**

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

### Results Table (Continued)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Ranks</th>
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<th>Ratio</th>
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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  
- **Compute Node:** ThinkSystem SR650  
- **Interconnect:** Intel Omni-Path

### Software Summary

- **C Compiler:** Intel C++ Compiler 17.0 Update 7 for Linux Version 17.0.7 Build 20180403  
- **C++ Compiler:** Intel C++ Compiler 17.0 Update 7 for Linux Version 17.0.7 Build 20180403  
- **Fortran Compiler:** Intel Fortran Compiler 17.0 Update 7 for Linux Version 17.0.7 Build 20180403  
- **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 SR650

#### Hardware

- **Number of nodes:** 2  
- **Uses of the node:** compute  
- **Vendor:** Lenovo Global Technology  
- **Model:** SR650  
- **CPU Name:** Intel Xeon Platinum 8180  
- **CPU(s) orderable:** 1-2 chips  
- **Chips enabled:** 2  
- **Cores enabled:** 56  
- **Threads per core:** 1  
- **CPU Characteristics:** None  
- **CPU MHz:** 2500  
- **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 shared / 28 cores  
- **Other Cache:** None  
- **Memory:** 768 GB (24 x 32 GB 2Rx4 PC4-2666V)  
- **Disk Subsystem:** 800 GB 12 Gbps SAS 2.5" SSD (JBOD)  
- **Other Hardware:** ThinkSystem RAID 930-8i 2GB Flash  
- **Adapter:** Intel Omni-Path Fabric Adapter 100 Series  
- **Number of Adapters:** 1  
- **Slot Type:** PCI-Express x16  
- **Data Rate:** 100 Gb/s

#### Software

- **Adapter:** Intel Omni-Path Fabric Adapter 100 Series  
- **Adapter Driver:** IFS 10.4.2.0.7  
- **Adapter Firmware:** 10.4.0.0.146  
- **Operating System:** Red Hat Enterprise Linux Server release 7.3, Kernel 3.10.0-514.48.5.el7.x86_64  
- **Local File System:** xfs  
- **Shared File System:** nfs  
- **System State:** Multi-user  
- **Other Software:** NONE

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**MPI2007 license**: 28

**Test sponsor**: Lenovo Global Technology

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<table>
<thead>
<tr>
<th>Ports Used</th>
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<tbody>
<tr>
<td>Interconnect Type</td>
<td>Direct Attached Cable (DAC)</td>
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**Node Description: ThinkSystem SR650**

**Interconnect Description: Intel Omni-Path**

**Vendor**: Intel

**Model**: Intel Omni-Path Fabric Adapter 100 Series

**Switch Model**: N/A

**Number of Switches**: 0

**Number of Ports**: 0

**Data Rate**: N/A

**Firmware**: N/A

**Topology**: Direct Connect

**Primary Use**: MPI 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.

Add "intel_idle.max_cstate=0 intel_pstate=disable" into grub

**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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Test date: Aug-2018
Hardware Availability: Aug-2017
Software Availability: Jul-2018

Base Compiler Invocation

C benchmarks:
mpiicc

C++ benchmarks:
126.lammmps: mpiicpc

Fortran benchmarks:
mpiifort

Benchmarks using both Fortran and C:
mpiicc mpiifort

Base Portability Flags

121.pop2: -DSPEC_MPI_CASE_FLAG
126.lammmps: -DMPICH_IGNORE_CXXSEEK
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.lammmps: -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/Lenovo-SPECmpiM_Platform_Flags.20180912.html
http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20170711.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/mpi2007/flags/Lenovo-SPECmpiM_Platform_Flags.20180912.xml
http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20170711.xml
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For other inquiries, please contact webmaster@spec.org.

Tested with SPEC MPI2007 v2.0.1.  
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