### Lenovo Global Technology

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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Ranks</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
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<td>113.GemsFDTD</td>
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<td>26.3</td>
<td>111</td>
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<td>127.wrf2</td>
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</tbody>
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**Results Table**

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.
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### Results Table (Continued)

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<tr>
<td></td>
<td>Base</td>
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</tr>
<tr>
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<td>Peak</td>
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<td><strong>60.8</strong></td>
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<td>79.6</td>
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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
- Total Compute Nodes: 2
- Total Chips: 4
- Total Cores: 112
- Total Threads: 112
- Total Memory: 1536 GB
- Base Ranks Run: 112
- Minimum Peak Ranks: --
- Maximum Peak Ranks: --

### Software Summary

- C Compiler: Intel C++ Compiler 17.0 Update 4 for Linux  
  Version 17.0.4 Build 20170411
- C++ Compiler: Intel C++ Compiler 17.0 Update 4 for Linux  
  Version 17.0.4 Build 20170411
- Fortran Compiler: Intel Fortran Compiler 17.0 Update 4 for Linux 
  Version 2017 Update 3 Build 20170405
- Other MPI Info: None
- 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
- Cores per chip: 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: 38.5 MB 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.el7.x86_64
- Local File System: xfs
- Shared File System: nfs
- System State: Multi-user
- Other Software: NONE

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Continued on next page
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ThinkSystem SR650 (Intel Xeon Platinum 8180 CPU, 2.50 GHz)

SPECmpiM_peak2007 = Not Run
SPECmpiM_base2007 = 34.0

Node Description: ThinkSystem SR650

| Ports Used: | 1 |
| Interconnect Type: | Direct Attached Cable (DAC) |

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 2x32GB 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

Base Compiler Invocation

C benchmarks:
  mpiicc

C++ benchmarks:
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SPECmpiM_base2007 = 34.0

Base Compiler Invocation (Continued)

126.lammps: mpiicc

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

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

The flags files that were used to format this result can be browsed at
http://www.spec.org/mpi2007/flags/Lenovo-SPECmpiM_Platform_Flags.html
http://www.spec.org/mpi2007/flags/EM64T_Intell7_flags.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/mpi2007/flags/Lenovo-SPECmpiM_Platform_Flags.xml
http://www.spec.org/mpi2007/flags/EM64T_Intell7_flags.xml
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<th>MPI2007 license</th>
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<tr>
<td>Test sponsor</td>
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<td>Tested by</td>
<td>Lenovo Global Technology</td>
</tr>
</tbody>
</table>

- **Test date:** Sep-2017
- **Hardware Availability:** Aug-2017
- **Software Availability:** Aug-2017

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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.  