**Lenovo Global Technology**

ThinkSystem SR665  
(AMD EPYC 7763, 2.45 GHz)

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**Results Table**

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**Results Table continued on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.**
## Lenovo Global Technology

**ThinkSystem SR665**  
(AMD EPYC 7763, 2.45 GHz)

**SPECmpiM_peak2007 = 72.3**  
**SPECmpiM_base2007 = 72.3**

**MPI2007 license:** 28  
**Test date:** Mar-2021  
**Test sponsor:** Lenovo Global Technology  
**Hardware Availability:** Mar-2021  
**Tested by:** Lenovo Global Technology  
**Software Availability:** Mar-2021

### Results Table (Continued)

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</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 SR665  
- **Interconnect:** Mellanox ConnectX-6 HDR  
- **File Server Node:** NFS  
- **Total Compute Nodes:** 6  
- **Total Chips:** 12  
- **Total Cores:** 768  
- **Total Memory:** 6 TB  
- **Base Ranks Run:** 768  
- **Minimum Peak Ranks:** 768  
- **Maximum Peak Ranks:** 768

### Software Summary

- **C Compiler:** AMD Optimizing C Compiler for Linux  
  Version 2.3.0 Build 2020_11_10  
- **C++ Compiler:** AMD Optimizing C++ Compiler for Linux  
  Version 2.3.0 Build 2020_11_10  
- **Fortran Compiler:** AMD Optimizing Fortran Compiler for Linux  
  Version 2.3.0 Build 2020_11_10  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** Not Applicable  
- **MPI Library:** Open MPI Library  
  Version 4.1.0  
- **Other MPI Info:** None  
- **Pre-processors:** No  
- **Other Software:** None

### Node Description: ThinkSystem SR665

#### Hardware

- **Number of nodes:** 6  
- **Uses of the node:** compute  
- **Vendor:** Lenovo Global Technology  
- **Model:** SR665  
- **CPU Name:** AMD EPYC 7763  
- **CPU(s) orderable:** 1-2 chips  
- **Chips enabled:** 2  
- **Cores enabled:** 128  
- **Threads per core:** 1  
- **CPU Characteristics:** None  
- **CPU MHz:** 2450  
- **Primary Cache:** 32 KB I + 32 KB D on chip per core  
- **Secondary Cache:** 512 KB I+D on chip per core  
- **L3 Cache:** 256 MB I+D on chip per chip  
- **Other Cache:** None  
- **Memory:** 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R)  
- **Disk Subsystem:** 1 x 480 GB SATA 2.5" SSD  
- **Other Hardware:** None  
- **Adapter:** Mellanox ConnectX-6 HDR Infiniband  
- **Number of Adapters:** 1  
- **Slot Type:** PCI-Express 4.0 x16

#### Software

- **Adapter:** Mellanox ConnectX-6 HDR Infiniband  
- **Adapter Driver:** 5.2-1.0.4  
- **Adapter Firmware:** 20.25.2006  
- **Operating System:** Red Hat Enterprise Linux Server release 8.3  
  4.18.0-240.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 SR665**  
(AMD EPYC 7763, 2.45 GHz)

### SPECmpiM2007 Results

- **SPECmpiM_peak2007**: 72.3
- **SPECmpiM_base2007**: 72.3

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<tr>
<td><strong>Test date</strong></td>
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<tr>
<td><strong>Software Availability</strong></td>
<td>Mar-2021</td>
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</tbody>
</table>

### Node Description: ThinkSystem SR665

- **Data Rate**: 200 Gbs/s  
- **Ports Used**: 1  
- **Interconnect Type**: Mellanox ConnectX-6 HDR Infiniband Adapter

### Node Description: NFS

#### Hardware

- **Number of nodes**: 1  
- **Uses of the node**: Fileserver  
- **Vendor**: Lenovo Global Technology  
- **Model**: ThinkSystem SR665  
- **CPU Name**: AMD EPYC 7763 CPU  
- **CPU(s) orderable**: 1-2 chips  
- **Chips enabled**: 2  
- **Cores enabled**: 128  
- **Cores per chip**: 64  
- **Threads per core**: 1  
- **CPU Characteristics**: None  
- **CPU MHz**: 2450  
- **Primary Cache**: 32 KB I + 32 KB D on chip per core  
- **Secondary Cache**: 512 KB I+D on chip per core  
- **L3 Cache**: 256 MB I+D on chip per chip  
- **32 MB shared / 8 cores**  
- **Other Cache**: None  
- **Memory**: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R)  
- **Disk Subsystem**: 1 x 480 GB SATA 2.5” SSD  
- **Other Hardware**: None  
- **Adapter**: Mellanox ConnectX-6 HDR Infiniband  
- **Number of Adapters**: 1  
- **Slot Type**: PCI-Express 4.0 x16  
- **Data Rate**: 200 Gb/s  
- **Ports Used**: 1  
- **Interconnect Type**: Mellanox ConnectX-6 HDR Infiniband

#### Software

- **Adapter**: Mellanox ConnectX-6 HDR Infiniband  
- **Adapter Driver**: 5.2-1.0.4  
- **Adapter Firmware**: 20.25.2006  
- **Operating System**: Red Hat Enterprise Linux Server release 8.3  
- **Local File System**: None  
- **Shared File System**: NFS  
- **System State**: Multi-User, run level 3  
- **Other Software**: None

### Interconnect Description: Mellanox ConnectX-6 HDR

#### Hardware

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

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Continued on next page
Lenovo Global Technology

ThinkSystem SR665
(AMD EPYC 7763, 2.45 GHz)

SPECmpiiM_peak2007 = 72.3
SPECmpiiM_base2007 = 72.3

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

Interconnect Description: Mellanox ConnectX-6 HDR
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 1 x 64 GB RDIMM on each memory channel.
Add "idle=poll" into grub
BIOS settings:
  Operating Mode : Maximum Performance Mode
  Hyper-Threading Technology (SMT): Enabled
NPS4
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:
  mpicc
C++ benchmarks:
  126.lammps: mpicxx
Fortran benchmarks:
  mpifort
Benchmarks using both Fortran and C:
  mpicc mpifort

Base Portability Flags
  121.pop2: -DSPEC_MPI_CASE_FLAG
  126.lammps: -DMPICH_IGNORE_CXXSEEK

Continued on next page
SPEC MPIM2007 Result

Lenovo Global Technology
ThinkSystem SR665
(AMD EPYC 7763, 2.45 GHz)

SPECMpiM_peak2007 = 72.3
SPECMpiM_base2007 = 72.3

MPI2007 license: 28
Test date: Mar-2021
Test sponsor: Lenovo Global Technology
Hardware Availability: Mar-2021
Tested by: Lenovo Global Technology
Software Availability: Mar-2021

Base Portability Flags (Continued)
127.wrf2: -DSPEC_MPI_CASE_FLAG -DSPEC_MPI_LINUX -Wno-return-type

Base Optimization Flags
C benchmarks:
-Ofast -flto -ffast-math -march=znver2 -mno-avx2
-L/home/amd-libm/lib -lamdlibm

C++ benchmarks:
126.lammps: -Ofast -flto -ffast-math -march=znver2 -mno-avx2
-L/home/amd-libm/lib -lamdlibm

Fortran benchmarks:
-Ofast -flto -ffast-math -march=znver2 -mno-avx2 -funroll-loops
-L/home/amd-libm/lib -lamdlibm

Benchmarks using both Fortran and C:
-Ofast -flto -ffast-math -march=znver2 -mno-avx2 -funroll-loops
-L/home/amd-libm/lib -lamdlibm

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:

Continued on next page
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ThinkSystem SR665
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SPECmpiM_peak2007 = 72.3
SPECmpiM_base2007 = 72.3

Peak Optimization Flags (Continued)

115.fds4: basepeak = yes
121.pop2: basepeak = yes
127.wrf2: basepeak = yes
128.GAPgeofem: basepeak = yes
130.socorro: basepeak = yes
132.zeusmp2: basepeak = yes

The flags file that was used to format this result can be browsed at

You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/AMD_flags.20210315.xml

SPEC and SPEC MPI are registered trademarks of the Standard Performance
Evaluation Corporation. All other brand and product names appearing in
this result are trademarks or registered trademarks of their respective
holders.

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 15 March 2021.