



# SPEChpc™ 2021 Small Result

Copyright 2021-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

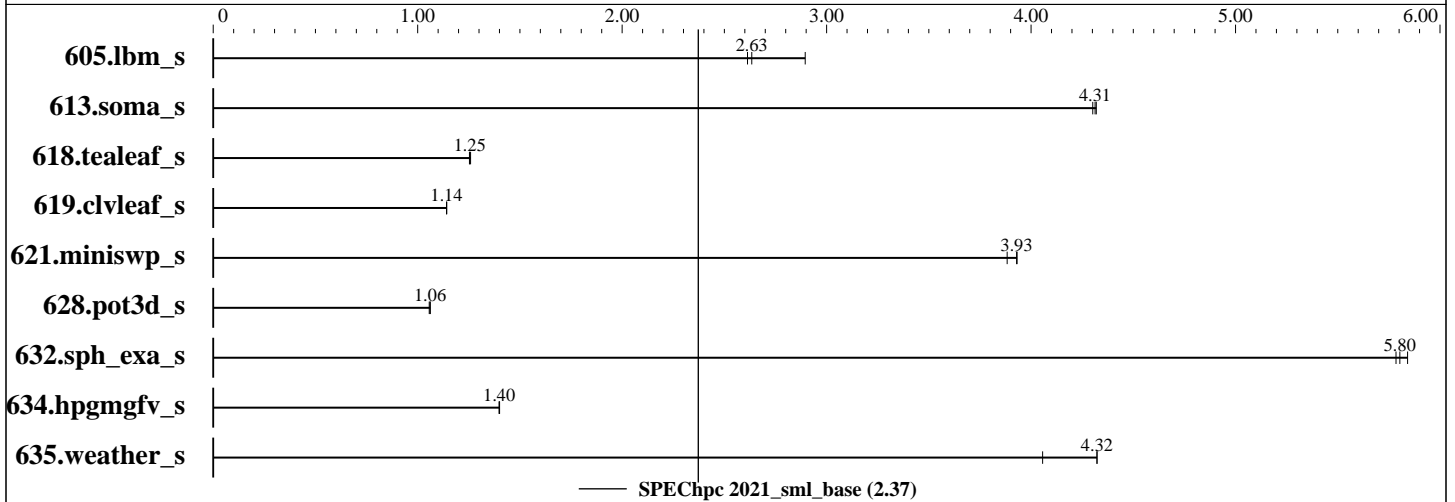
SPEChpc 2021\_sml\_base = 2.37

## ThinkSystem SR665 (AMD EPYC 7763)

SPEChpc 2021\_sml\_peak = Not Run

hpc2021 License: 28  
Test Sponsor: Lenovo Global Technology  
Tested by: Lenovo Global Technology

Test Date: Aug-2021  
Hardware Availability: Mar-2021  
Software Availability: Oct-2020



## Results Table

Benchmark	Base										Peak							
	Model	Ranks	Thrds/Rnk	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Model	Ranks	Thrds/Rnk	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
605.lbm_s	OMP	64	8	535	2.90	593	2.61	<b>588</b>	<b>2.63</b>									
613.soma_s	OMP	64	8	<b>371</b>	<b>4.31</b>	372	4.30	370	4.32									
618.tealeaf_s	OMP	64	8	1636	1.25	<b>1634</b>	<b>1.25</b>	1629	1.26									
619.cvlleaf_s	OMP	64	8	1446	1.14	<b>1445</b>	<b>1.14</b>	1445	1.14									
621.miniswp_s	OMP	64	8	<b>280</b>	<b>3.93</b>	283	3.88	280	3.93									
628.pot3d_s	OMP	64	8	1585	1.06	<b>1579</b>	<b>1.06</b>	1579	1.06									
632.sph_exa_s	OMP	64	8	398	5.78	<b>396</b>	<b>5.80</b>	394	5.84									
634.hpgmgfv_s	OMP	64	8	<b>697</b>	<b>1.40</b>	696	1.40	697	1.40									
635.weather_s	OMP	64	8	641	4.06	<b>602</b>	<b>4.32</b>	601	4.32									

SPEChpc 2021\_sml\_base = 2.37

SPEChpc 2021\_sml\_peak = Not Run

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.



# SPEChpc™ 2021 Small Result

Copyright 2021-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPEChpc 2021\_sml\_base = 2.37

## ThinkSystem SR665 (AMD EPYC 7763)

SPEChpc 2021\_sml\_peak = Not Run

**hpc2021 License:** 28  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

**Test Date:** Aug-2021  
**Hardware Availability:** Mar-2021  
**Software Availability:** Oct-2020

### Hardware Summary

Type of System: Homogenous  
Compute Node: ThinkSystem SR665  
Interconnect: Nvidia Mellanox ConnectX-6 HDR  
File Server Node: ThinkSystem SR665  
Compute Nodes Used: 4  
Total Chips: 8  
Total Cores: 512  
Total Threads: 512  
Total Memory: 2 TB  
Max. Peak Threads: --

### Software Summary

Compiler: Intel C/C++/Fortran Compiler 20.4  
MPI Library: Open MPI 4.0.5  
Other MPI Info: --  
Other Software: --  
Base Parallel Model: OMP  
Base Ranks Run: 64  
Base Threads Run: 8  
Peak Parallel Models: Not Run  
Minimum Peak Ranks: --  
Maximum Peak Ranks: --  
Max. Peak Threads: --  
Min. Peak Threads: --

## Node Description: ThinkSystem SR665

### Hardware

Number of nodes: 4  
Uses of the node: Compute  
Vendor: Lenovo Global Technology  
Model: ThinkSystem SR665  
CPU Name: AMD EPYC 7763  
CPU(s) orderable: 1,2 chips  
Chips enabled: 2  
Cores enabled: 128  
Cores per chip: 64  
Threads per core: 1  
CPU Characteristics: Max Boost Clock up to 3.5 GHz  
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: 512 GB (16 x 32 GB 2Rx8 PC4-3200A-R)  
Disk Subsystem: 1 x 480 GB 2.5" SSD  
Other Hardware: None  
Accel Count: --  
Accel Model: --  
Accel Vendor: --  
Accel Type: --  
Accel Connection: --  
Accel ECC enabled: --  
Accel Description: --  
Adapter: Mellanox ConnectX-6 HDR  
Number of Adapters: 1  
Slot Type: PCI-Express 4.0 x16  
Data Rate: 200 Gb/s  
Ports Used: 1

### Software

Accelerator Driver: --  
Adapter: Mellanox ConnectX-6 HDR  
Adapter Driver: 5.2-1.0.4  
Adapter Firmware: 20.28.1002  
Operating System: Red Hat Enterprise Linux Server release 8.3,  
Kernel 4.18.0-193.el8.x86\_64  
Local File System: xfs  
Shared File System: NFS  
System State: Multi-user, run level 3  
Other Software: None

(Continued on next page)



# SPEChpc™ 2021 Small Result

Copyright 2021-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPEChpc 2021\_sml\_base = 2.37

## ThinkSystem SR665 (AMD EPYC 7763)

SPEChpc 2021\_sml\_peak = Not Run

**hpc2021 License:** 28  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

**Test Date:** Aug-2021  
**Hardware Availability:** Mar-2021  
**Software Availability:** Oct-2020

### Node Description: ThinkSystem SR665

#### Hardware (Continued)

Interconnect Type: Nvidia Mellanox ConnectX-6 HDR

### Node Description: ThinkSystem SR665

#### Hardware

Number of nodes: 1  
Uses of the node: Fileserver  
Vendor: Lenovo Global Technology  
Model: ThinkSystem SR665  
CPU Name: AMD EPYC 7763  
CPU(s) orderable: 1,2 chips  
Chips enabled: 2  
Cores enabled: 128  
Cores per chip: 64  
Threads per core: 1  
CPU Characteristics: Max Boost Clock up to 3.5 GHz  
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: 512 GB (16 x 32 GB 2Rx8 PC4-3200A-R)  
Disk Subsystem: 1 x 480 GB 2.5" SSD  
Other Hardware: None  
Accel Count: --  
Accel Model: --  
Accel Vendor: --  
Accel Type: --  
Accel Connection: --  
Accel ECC enabled: --  
Accel Description: --  
Adapter: Mellanox ConnectX-6 HDR  
Number of Adapters: 1  
Slot Type: PCI-Express 4.0 x16  
Data Rate: 200 Gb/s  
Ports Used: 1  
Interconnect Type: Nvidia Mellanox ConnectX-6 HDR

#### Software

Accelerator Driver: --  
Adapter: Mellanox ConnectX-6 HDR  
Adapter Driver: 5.2-1.0.4  
Adapter Firmware: 20.28.1002  
Operating System: Red Hat Enterprise Linux Server release 8.3  
Local File System: xfs  
Shared File System: N/A  
System State: Multi-User, run level 3  
Other Software: None



# SPEChpc™ 2021 Small Result

Copyright 2021-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPEChpc 2021\_sml\_base = 2.37

## ThinkSystem SR665 (AMD EPYC 7763)

SPEChpc 2021\_sml\_peak = Not Run

**hpc2021 License:** 28  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

**Test Date:** Aug-2021  
**Hardware Availability:** Mar-2021  
**Software Availability:** Oct-2020

### Interconnect Description: Nvidia Mellanox ConnectX-6 HDR

#### Hardware

#### Software

Vendor: Nvidia : --  
Model: Nvidia Mellanox ConnectX-6 HDR  
Switch Model: QM8700 Series  
Number of Switches: 1  
Number of Ports: 40  
Data Rate: 200 Gb/s  
Firmware: 3.9.0606  
Topology: Mesh  
Primary Use: MPI Traffic, NFS Access

### Submit Notes

The config file option 'submit' was used.  
submit = mpirun \${MPIRUN\_OPTS} --allow-run-as-root --oversubscribe  
--bind-to numa -map-by numa  
-mca coll\_hcoll\_enable 1 -x HCOLL\_ENABLE\_NBC=1  
-x HCOLL\_MAIN\_IB=mlx5\_0:1 -mca pml ucx  
-hostfile /home/HPC2021K35/config/6nodes -npernode 128 -np \$ranks \$command

### General Notes

Environment variables set by runhpc before the start of the run:  
UCX\_MEMTYPE\_CACHE = "n"  
UCX\_TLS = "self,shm,cuda\_copy"

### Compiler Version Notes

=====  
CC 605.lbm\_s(base) 613.soma\_s(base) 618.tealeaf\_s(base) 621.miniswp\_s(base)  
634.hpgmgfv\_s(base)

-----  
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.1.3.304 Build 20200925\_000000  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.  
icc: NOTE: The evaluation period for this product ends on 11-may-2021 UTC.  
-----

=====  
CXXC 632.sph\_exa\_s(base)

-----  
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.1.3.304 Build 20200925\_000000

(Continued on next page)



# SPEChpc™ 2021 Small Result

Copyright 2021-2023 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPEChpc 2021\_sml\_base = 2.37

ThinkSystem SR665 (AMD EPYC 7763)

SPEChpc 2021\_sml\_peak = Not Run

**hpc2021 License:** 28  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

**Test Date:** Aug-2021  
**Hardware Availability:** Mar-2021  
**Software Availability:** Oct-2020

## Compiler Version Notes (Continued)

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.  
icpc: NOTE: The evaluation period for this product ends on 11-may-2021 UTC.

=====  
FC 619.clvleaf\_s(base) 628.pot3d\_s(base) 635.weather\_s(base)  
=====

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)  
64, Version 19.1.3.304 Build 20200925\_000000  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.  
ifort: NOTE: The evaluation period for this product ends on 11-may-2021 UTC.

## Base Compiler Invocation

C benchmarks:  
mpicc

C++ benchmarks:  
mpicxx

Fortran benchmarks:  
mpifort

## Base Portability Flags

613.soma\_s: -DSPEC\_NO\_VAR\_ARRAY\_REDUCE  
621.miniswp\_s: -DUSE\_KBA -DUSE\_ACCELDIR  
632.sph\_exa\_s: -DSPEC\_USE\_LT\_IN\_KERNELS

## Base Optimization Flags

C benchmarks:  
-Ofast -no-prec-div -march=core-avx2 -ipo -qopenmp -ansi-alias

C++ benchmarks:  
-Ofast -no-prec-div -march=core-avx2 -ipo -qopenmp -ansi-alias

Fortran benchmarks:  
-Ofast -no-prec-div -march=core-avx2 -ipo -qopenmp



# SPEChpc™ 2021 Small Result

Copyright 2021-2023 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPEChpc 2021\_sml\_base = 2.37

ThinkSystem SR665 (AMD EPYC 7763)

SPEChpc 2021\_sml\_peak = Not Run

**hpc2021 License:** 28  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

**Test Date:** Aug-2021  
**Hardware Availability:** Mar-2021  
**Software Availability:** Oct-2020

The flags file that was used to format this result can be browsed at  
[http://www.spec.org/hpc2021/flags/Intel\\_compiler\\_flags.2021-10-20.html](http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2021-10-20.html)

You can also download the XML flags source by saving the following link:  
[http://www.spec.org/hpc2021/flags/Intel\\_compiler\\_flags.2021-10-20.xml](http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2021-10-20.xml)

SPEChpc is a trademark 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 [info@spec.org](mailto:info@spec.org).

Tested with SPEChpc2021 v1.0.1 on 2018-07-14 16:56:03-0400.  
Report generated on 2023-08-25 18:58:07 by hpc2021 PDF formatter v1.0.3.  
Originally published on 2021-10-20.