



# SPEChpc™ 2021 Medium Result

Copyright 2021-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

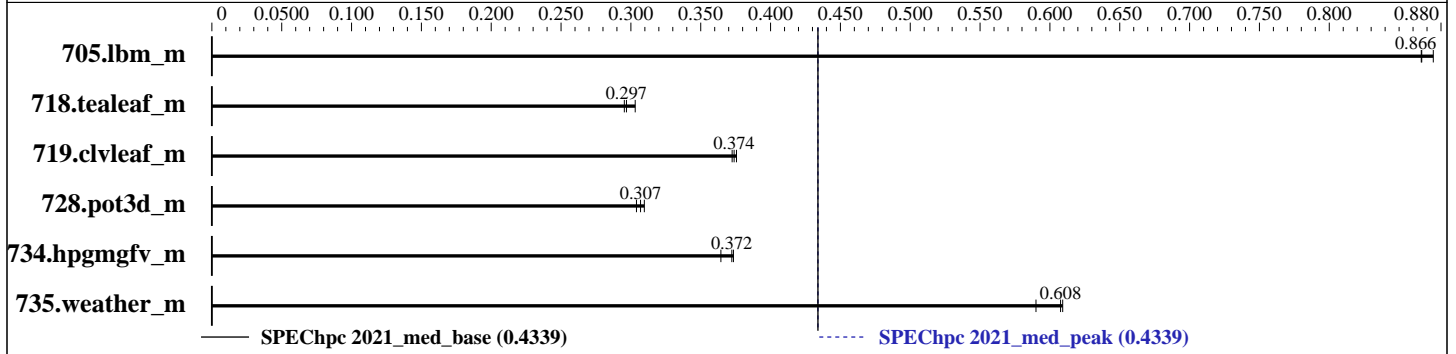
SPEChpc 2021\_med\_base = 0.4339

## ThinkSystem SR665 V3 (AMD EPYC 9654)

SPEChpc 2021\_med\_peak = 0.4339

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

Test Date: Jan-2023  
Hardware Availability: Nov-2022  
Software Availability: Nov-2022



### 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
705.lbm_m	OMP	120	8	1401	0.874	1415	0.866	<b>1414</b>	<b>0.866</b>	OMP	120	8	1401	0.874	1415	0.866	<b>1414</b>	<b>0.866</b>
718.tealeaf_m	OMP	120	8	4454	0.303	4572	0.295	<b>4548</b>	<b>0.297</b>	OMP	120	8	4454	0.303	4572	0.295	<b>4548</b>	<b>0.297</b>
719.clvleaf_m	OMP	120	8	4925	0.376	<b>4948</b>	<b>0.374</b>	4967	0.372	OMP	120	8	4925	0.376	<b>4948</b>	<b>0.374</b>	4967	0.372
728.pot3d_m	OMP	120	8	5975	0.310	<b>6028</b>	<b>0.307</b>	6086	0.304	OMP	120	8	5975	0.310	<b>6028</b>	<b>0.307</b>	6086	0.304
734.hpgmgfv_m	OMP	120	8	2678	0.373	<b>2686</b>	<b>0.372</b>	2744	0.364	OMP	120	8	2678	0.373	<b>2686</b>	<b>0.372</b>	2744	0.364
735.weather_m	OMP	120	8	3940	0.609	<b>3950</b>	<b>0.608</b>	4068	0.590	OMP	120	8	3940	0.609	<b>3950</b>	<b>0.608</b>	4068	0.590

SPEChpc 2021\_med\_base = 0.4339

SPEChpc 2021\_med\_peak = 0.4339

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



# SPEChpc™ 2021 Medium Result

Copyright 2021-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPEChpc 2021\_med\_base = 0.4339

## ThinkSystem SR665 V3 (AMD EPYC 9654)

SPEChpc 2021\_med\_peak = 0.4339

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

**Test Date:** Jan-2023  
**Hardware Availability:** Nov-2022  
**Software Availability:** Nov-2022

### Hardware Summary

Type of System: Homogenous Cluster  
Compute Node: ThinkSystem SR665 V3  
Interconnect: Nvidia Mellanox ConnectX-6 HDR  
Compute Nodes Used: 5  
Total Chips: 10  
Total Cores: 960  
Total Threads: 1920  
Total Memory: 7680 GB  
Max. Peak Threads: 8

### Software Summary

Compiler: Intel oneAPI Compiler 2022.1.0  
MPI Library: Intel MPI Library for Linux OS, Build 20220227  
Other MPI Info: --  
Other Software: --  
Base Parallel Model: OMP  
Base Ranks Run: 120  
Base Threads Run: 8  
Peak Parallel Models: OMP  
Minimum Peak Ranks: 120  
Maximum Peak Ranks: 120  
Max. Peak Threads: 8  
Min. Peak Threads: 8

## Node Description: ThinkSystem SR665 V3

### Hardware

Number of nodes: 5  
Uses of the node: Compute  
Vendor: Lenovo Global Technology  
Model: ThinkSystem SR665 V3  
CPU Name: AMD EPYC 9654  
CPU(s) orderable: 1,2 chips  
Chips enabled: 2  
Cores enabled: 192  
Cores per chip: 96  
Threads per core: 2  
CPU Characteristics: Max Boost Clock up to 3.7 GHz  
CPU MHz: 2400  
Primary Cache: 32 KB I + 32 KB D on chip per core  
Secondary Cache: 1 MB I+D on chip per core  
L3 Cache: 384 MB I+D on chip per chip  
32 MB shared / 8 cores  
Other Cache: None  
Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)  
Disk Subsystem: 1x ThinkSystem 2.5" 5300 480GB SSD  
Other Hardware: None  
Accel Count: --  
Accel Model: --  
Accel Vendor: --  
Accel Type: --  
Accel Connection: --  
Accel ECC enabled: --  
Accel Description: --  
Adapter: Nvidia 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: Nvidia Mellanox ConnectX-6 HDR  
Adapter Driver: 5.7-1.0.2  
Adapter Firmware: 20.28.1002  
Operating System: Red Hat Enterprise Linux Server release 8.6,  
Kernel 4.18.0-372.9.1.el8.x86\_64  
Local File System: xfs  
Shared File System: None  
System State: Multi-user, run level 3  
Other Software: None

(Continued on next page)



# SPEChpc™ 2021 Medium Result

Copyright 2021-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPEChpc 2021\_med\_base = 0.4339

## ThinkSystem SR665 V3 (AMD EPYC 9654)

SPEChpc 2021\_med\_peak = 0.4339

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

**Test Date:** Jan-2023  
**Hardware Availability:** Nov-2022  
**Software Availability:** Nov-2022

### Node Description: ThinkSystem SR665 V3

#### Hardware (Continued)

Interconnect Type: ConnectX-6 HDR

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

##### Hardware

Vendor: Nvidia  
Model: Nvidia Mellanox ConnectX-6 HDR  
Switch Model: QM8700  
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

##### Software

: --

### Submit Notes

The config file option 'submit' was used.

```
submit = mpiexec -hostfile ${top}/4nodes -np ranks -genv OMP_NUM_THREADS=$threads -ppn %{NRNK} $command
```

### Compiler Version Notes

```
=====
FC 719.clvleaf_m(base) 728.pot3d_m(base) 735.weather_m(base)
-----
```

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316

Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

ifx: command line error: no files specified; for help type "ifx -help"

```
=====
CC 705.lbm_m(base) 718.tealeaf_m(base) 734.hpgmgfv_m(base)
-----
```

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316

Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

clang: warning: -Z-reserved-lib-stdc++: 'linker' input unused

[-Wunused-command-line-argument]



# SPEChpc™ 2021 Medium Result

Copyright 2021-2023 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPEChpc 2021\_med\_base = 0.4339

ThinkSystem SR665 V3 (AMD EPYC 9654)

SPEChpc 2021\_med\_peak = 0.4339

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

**Test Date:** Jan-2023  
**Hardware Availability:** Nov-2022  
**Software Availability:** Nov-2022

## Base Compiler Invocation

C benchmarks:

mpiicc -cc=icx

Fortran benchmarks:

mpiifort -fc=ifx

## Base Portability Flags

705.lbm\_m: -lstdc++  
718.tealeaf\_m: -lstdc++  
719.cvlleaf\_m: -lstdc++  
728.pot3d\_m: -lstdc++  
734.hpgmgfv\_m: -lstdc++  
735.weather\_m: -lstdc++

## Base Optimization Flags

C benchmarks:

-Ofast -mprefer-vector-width=512 -march=core-avx2 -ipo -fiopenmp  
-ansi-alias

Fortran benchmarks:

-Ofast -mprefer-vector-width=512 -march=core-avx2 -ipo -fiopenmp  
-nostandard-realloc-lhs -align array64byte

## Base Other Flags

C benchmarks (except as noted below):

-Ispecmpitime

734.hpgmgfv\_m: -Ispecmpitime

Fortran benchmarks:

719.cvlleaf\_m: -Ispecmpitime



# SPEChpc™ 2021 Medium Result

Copyright 2021-2023 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPEChpc 2021\_med\_base = 0.4339

ThinkSystem SR665 V3 (AMD EPYC 9654)

SPEChpc 2021\_med\_peak = 0.4339

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

**Test Date:** Jan-2023  
**Hardware Availability:** Nov-2022  
**Software Availability:** Nov-2022

## Peak Optimization Flags

C benchmarks:

705.lbm\_m: basepeak = yes

718.tealeaf\_m: basepeak = yes

734.hpgmgfv\_m: basepeak = yes

Fortran benchmarks:

719.clvleaf\_m: basepeak = yes

728.pot3d\_m: basepeak = yes

735.weather\_m: basepeak = yes

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

[http://www.spec.org/hpc2021/flags/Intel\\_compiler\\_flags.2022-11-10.html](http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2022-11-10.html)

You can also download the XML flags source by saving the following link:

[http://www.spec.org/hpc2021/flags/Intel\\_compiler\\_flags.2022-11-10.xml](http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2022-11-10.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 v1.1.7 on 2018-06-22 08:45:05-0400.  
Report generated on 2023-02-22 12:26:53 by hpc2021 PDF formatter v1.0.3.  
Originally published on 2023-02-22.