



# SPEChpc™ 2021 Tiny Result

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## Lenovo Global Technology

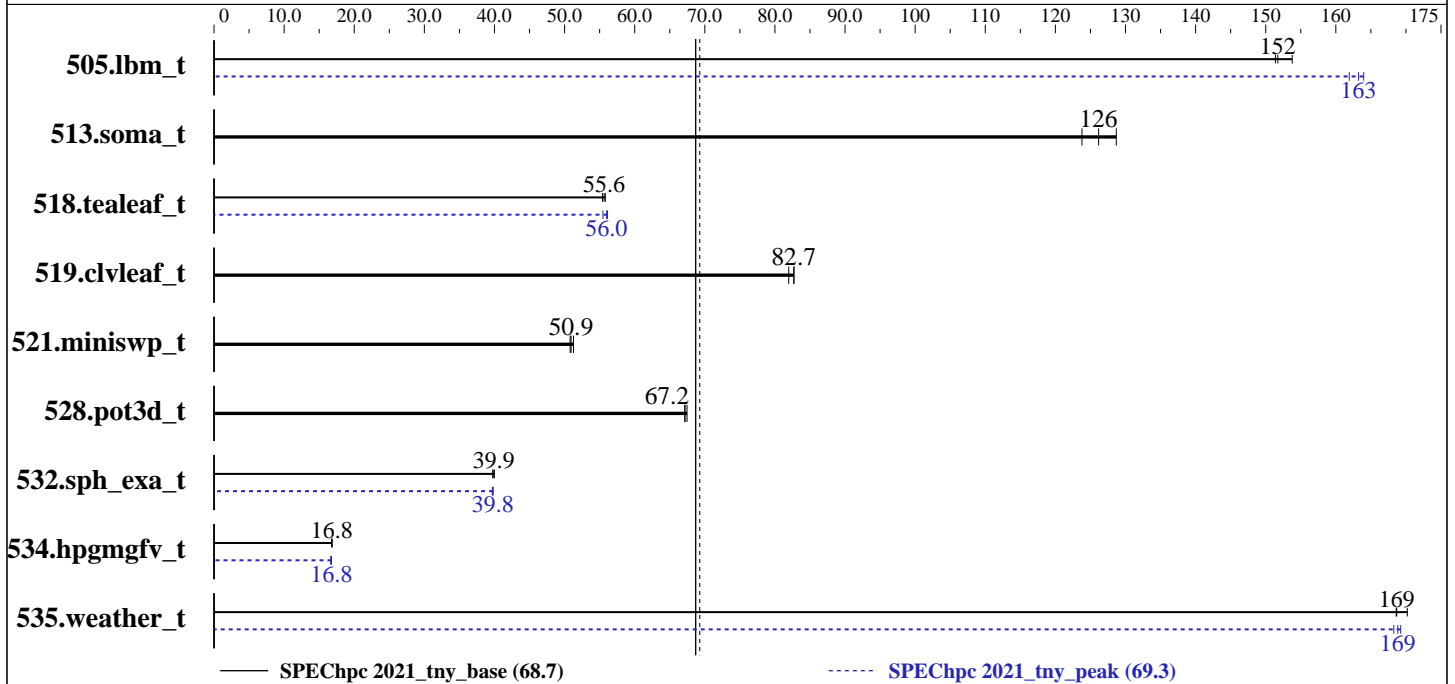
SPEChpc 2021\_tny\_base = 68.7

SPEChpc 2021\_tny\_peak = 69.3

ThinkSystem SR675 V3 (AMD EPYC 9654, Nvidia H100-PCIe-80G)

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

**Test Date:** Oct-2023  
**Hardware Availability:** Oct-2023  
**Software Availability:** Oct-2023



## 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
505.lbm_t	ACC	6	1	14.9	151	<b>14.8</b>	<b>152</b>	14.6	154	ACC	6	1	13.9	162	<b>13.8</b>	<b>163</b>	13.7	164
513.soma_t	ACC	6	1	<b>29.3</b>	<b>126</b>	28.8	129	29.9	124	ACC	6	1	<b>29.3</b>	<b>126</b>	28.8	129	29.9	124
518.tealeaf_t	ACC	6	1	<b>29.7</b>	<b>55.6</b>	29.6	55.8	29.8	55.4	ACC	6	1	29.7	55.5	29.4	56.1	<b>29.5</b>	<b>56.0</b>
519.civleaf_t	ACC	6	1	19.9	82.7	<b>20.0</b>	<b>82.7</b>	20.1	82.0	ACC	6	1	19.9	82.7	<b>20.0</b>	<b>82.7</b>	20.1	82.0
521.miniswp_t	ACC	6	1	<b>31.4</b>	<b>50.9</b>	31.5	50.8	31.2	51.3	ACC	6	1	<b>31.4</b>	<b>50.9</b>	31.5	50.8	31.2	51.3
528.pot3d_t	ACC	6	1	31.5	67.5	<b>31.6</b>	<b>67.2</b>	31.6	67.2	ACC	6	1	31.5	67.5	<b>31.6</b>	<b>67.2</b>	31.6	67.2
532.sph_exa_t	ACC	6	1	48.8	40.0	<b>48.9</b>	<b>39.9</b>	49.1	39.7	ACC	6	1	<b>49.0</b>	<b>39.8</b>	49.1	39.7	49.0	39.8
534.hpgmgfv_t	ACC	6	1	<b>69.9</b>	<b>16.8</b>	69.8	16.8	69.9	16.8	ACC	6	1	70.1	16.8	<b>70.1</b>	<b>16.8</b>	70.6	16.6
535.weather_t	ACC	6	1	<b>19.1</b>	<b>169</b>	18.9	170	19.1	169	ACC	6	1	19.1	169	<b>19.1</b>	<b>169</b>	19.2	168

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



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### Hardware Summary

Type of System: Homogeneous Cluster  
Compute Node: ThinkSystem SR675 V3  
Compute Nodes Used: 1  
Total Chips: 2  
Total Cores: 192  
Total Threads: 192  
Total Memory: 768 GB  
Max. Peak Threads: 1

### Software Summary

Compiler: Nvidia HPC SDK 23.5  
MPI Library: Open MPI 4.0.5  
Other MPI Info: None  
Other Software: --  
Base Parallel Model: ACC  
Base Ranks Run: 6  
Base Threads Run: 1  
Peak Parallel Models: ACC  
Minimum Peak Ranks: 6  
Maximum Peak Ranks: 6  
Max. Peak Threads: 1  
Min. Peak Threads: 1

## Node Description: ThinkSystem SR675 V3

### Hardware

Number of nodes: 1  
Uses of the node: compute  
Vendor: Lenovo Global Technology  
Model: ThinkSystem SR655 V3  
CPU Name: AMD EPYC 9654  
CPU(s) orderable: 1 chips  
Chips enabled: 2  
Cores enabled: 192  
Cores per chip: 96  
Threads per core: 1  
CPU Characteristics: Intel Turbo Boost Technology 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  
Other Cache: None  
Memory: 768 GB (24 x 32 GB 2Rx8 PC5-4800B-R)  
Disk Subsystem: 1x ThinkSystem 2.5" 5300 480GB SSD  
Other Hardware: None  
Accel Count: 8  
Accel Model: Tesla H100 PCIe 80GB  
Accel Vendor: Nvidia Corporation  
Accel Type: GPU  
Accel Connection: PCIe Gen5 x16  
Accel ECC enabled: Yes  
Accel Description: Nvidia Tesla H100 PCIe 80GB  
Adapter: Mellanox ConnectX-7 NDR  
Number of Adapters: 1  
Slot Type: PCI-Express 5.0 x8  
Data Rate: 400 Gb/s  
Ports Used: 1  
Interconnect Type: Nvidia Mellanox ConnectX-7 NDR

### Software

Accelerator Driver: 535.54.03  
Adapter: Mellanox ConnectX-7 NDR  
Adapter Driver: 5.9-0.5.5  
Adapter Firmware: 28.33.0508  
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: XFS  
System State: Multi-user, run level 3  
Other Software: None



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### Submit Notes

The config file option 'submit' was used.

### Compiler Version Notes

```
=====
CC 505.lbm_t(base, peak) 513.soma_t(base, peak) 518.tealeaf_t(base, peak)
   521.miniswp_t(base, peak) 534.hpgmgfv_t(base, peak)
-----
```

```
nvc 23.5-0 64-bit target on x86-64 Linux -tp zen3
NVIDIA Compilers and Tools
Copyright (c) 2022, NVIDIA CORPORATION & AFFILIATES. All rights reserved.
-----
```

```
=====
CXXC 532.sph_exa_t(base, peak)
-----
```

```
nvc++ 23.5-0 64-bit target on x86-64 Linux -tp zen3
NVIDIA Compilers and Tools
Copyright (c) 2022, NVIDIA CORPORATION & AFFILIATES. All rights reserved.
-----
```

```
=====
FC 519.clvleaf_t(base, peak) 528.pot3d_t(base, peak) 535.weather_t(base,
   peak)
-----
```

```
nvfortran 23.5-0 64-bit target on x86-64 Linux -tp zen3
NVIDIA Compilers and Tools
Copyright (c) 2022, NVIDIA CORPORATION & AFFILIATES. All rights reserved.
-----
```

### Base Compiler Invocation

C benchmarks:  
mpicc

C++ benchmarks:  
mpicxx

Fortran benchmarks:  
mpif90



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## Base Portability Flags

505.lbm\_t: -DSPEC\_OPENACC\_NO\_SELF

532.sph\_exa\_t: --c++17

## Base Optimization Flags

C benchmarks:

-Mfprelaxed -Mnuniform -Mstack\_arrays -fast -acc=gpu -Minfo=accel  
-DSPEC\_ACCEL\_AWARE\_MPI

C++ benchmarks:

-Mfprelaxed -Mnuniform -Mstack\_arrays -fast -acc=gpu -Minfo=accel  
-DSPEC\_ACCEL\_AWARE\_MPI

Fortran benchmarks:

-DSPEC\_ACCEL\_AWARE\_MPI -Mfprelaxed -Mnuniform -Mstack\_arrays -fast  
-acc=gpu -Minfo=accel

## Base Other Flags

C benchmarks:

-w

C++ benchmarks:

-w

Fortran benchmarks:

-w

## Peak Compiler Invocation

C benchmarks:

mpicc

C++ benchmarks:

mpicxx

Fortran benchmarks:

mpif90



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## Peak Portability Flags

505.lbm\_t: -DSPEC\_OPENACC\_NO\_SELF

## Peak Optimization Flags

C benchmarks:

505.lbm\_t: -fast -acc=gpu -O3 -Mfprelaxed -Mnouniform  
-DSPEC\_ACCEL\_AWARE\_MPI

513.soma\_t: basepeak = yes

518.tealeaf\_t: -fast -acc=gpu -Msafeptr -DSPEC\_ACCEL\_AWARE\_MPI

521.miniswp\_t: basepeak = yes

534.hpgmgfv\_t: -fast -acc=gpu -static-nvidia -DSPEC\_ACCEL\_AWARE\_MPI

C++ benchmarks:

-fast -acc=gpu -O3 -Mfprelaxed -Mnouniform -Mstack\_arrays  
-static-nvidia -DSPEC\_ACCEL\_AWARE\_MPI

Fortran benchmarks:

519.clvleaf\_t: basepeak = yes

528.pot3d\_t: basepeak = yes

535.weather\_t: -DSPEC\_ACCEL\_AWARE\_MPI -fast -acc=gpu -O3 -Mfprelaxed  
-Mnouniform -Mstack\_arrays -static-nvidia

## Peak Other Flags

C benchmarks:

-w

C++ benchmarks:

-w

Fortran benchmarks:

-w



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

[http://www.spec.org/hpc2021/flags/nv2021\\_flags\\_v1.0.3.2022-08-24.html](http://www.spec.org/hpc2021/flags/nv2021_flags_v1.0.3.2022-08-24.html)

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

[http://www.spec.org/hpc2021/flags/nv2021\\_flags\\_v1.0.3.2022-08-24.xml](http://www.spec.org/hpc2021/flags/nv2021_flags_v1.0.3.2022-08-24.xml)

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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

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