



SPEChpc™ 2021 Tiny Result

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Lenovo Global Technology

SPEChpc 2021_tny_base = 57.8

SPEChpc 2021_tny_peak = 58.3

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

hpc2021 License: 28

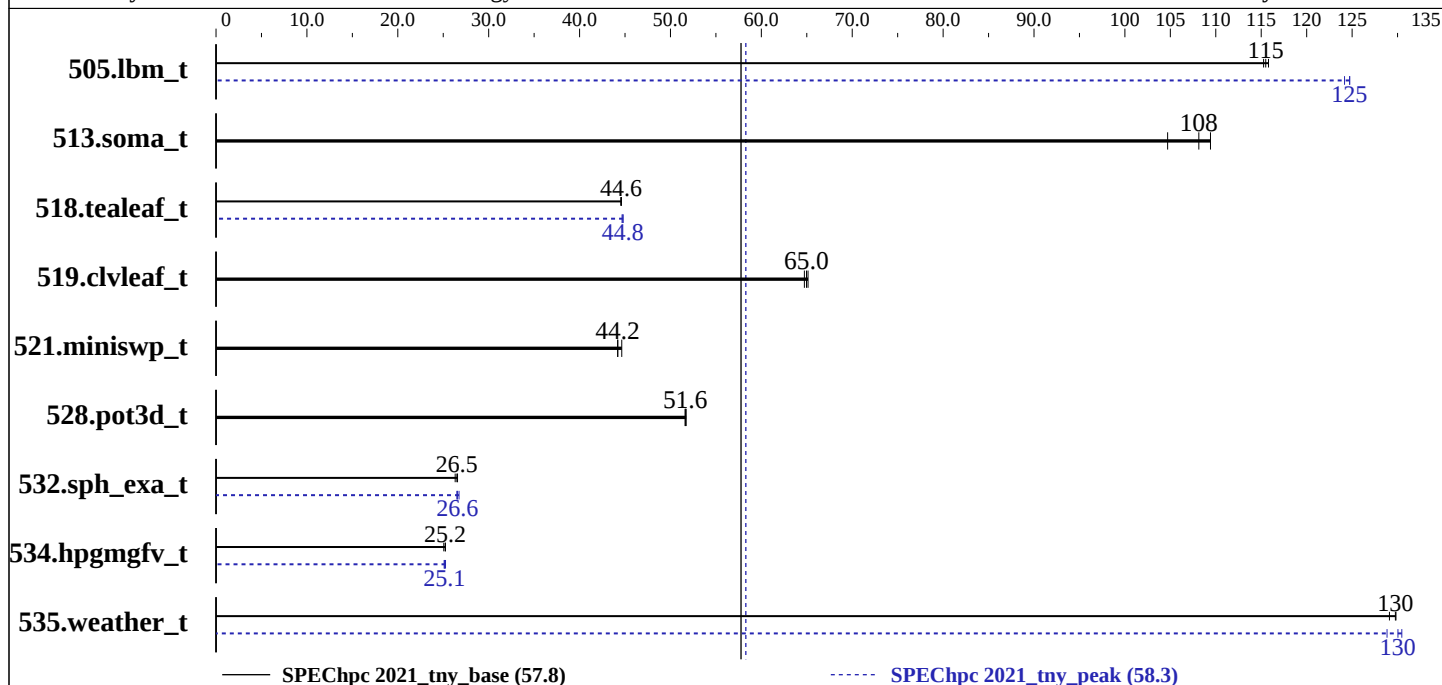
Test Sponsor: Lenovo Global Technology

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
505.lbm_t	ACC	4	1	<u>19.5</u>	<u>115</u>	19.4	116	19.5	115	ACC	4	1	<u>18.0</u>	<u>125</u>	18.1	124
513.soma_t	ACC	4	1	35.3	105	33.8	109	<u>34.2</u>	<u>108</u>	ACC	4	1	35.3	105	33.8	109
518.tealeaf_t	ACC	4	1	37.0	44.5	37.0	44.6	<u>37.0</u>	<u>44.6</u>	ACC	4	1	36.9	44.7	<u>36.9</u>	<u>44.8</u>
519.clvleaf_t	ACC	4	1	25.3	65.1	<u>25.4</u>	<u>65.0</u>	25.5	64.7	ACC	4	1	25.3	65.1	<u>25.4</u>	<u>65.0</u>
521.miniswp_t	ACC	4	1	<u>36.2</u>	<u>44.2</u>	35.8	44.6	36.2	44.2	ACC	4	1	<u>36.2</u>	<u>44.2</u>	35.8	44.6
528.pot3d_t	ACC	4	1	<u>41.1</u>	<u>51.6</u>	41.2	51.6	41.1	51.7	ACC	4	1	<u>41.1</u>	<u>51.6</u>	41.2	51.6
532.sph_exa_t	ACC	4	1	74.1	26.3	<u>73.6</u>	<u>26.5</u>	73.4	26.6	ACC	4	1	73.6	26.5	72.9	26.7
534.hpgmgfv_t	ACC	4	1	46.9	25.1	46.5	25.2	<u>46.6</u>	<u>25.2</u>	ACC	4	1	46.5	25.2	<u>46.8</u>	<u>25.1</u>
535.weather_t	ACC	4	1	<u>24.9</u>	<u>130</u>	24.8	130	25.0	129	ACC	4	1	24.7	130	25.0	129

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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
Total Accelerators: 8
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: 4
Base Threads Run: 1
Peak Parallel Models: ACC
Minimum Peak Ranks: 4
Maximum Peak Ranks: 4
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

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

nvc++ 23.5-0 64-bit target on x86-64 Linux -tp zen3

NVIDIA Compilers and Tools

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```
=====
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

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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 (except as noted below):

-Ispecmpitime -w

521.miniswp_t: -Ispecmpitime/ -w

534.hpgmgfv_t: -Ispecmpitime -w

C++ benchmarks:

-Ispecmpitime -w

Fortran benchmarks (except as noted below):

-w

519.clvleaf_t: -Ispecmpitime -w

Peak Compiler Invocation

C benchmarks:

mpicc

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Peak Compiler Invocation (Continued)

C++ benchmarks:

mpicxx

Fortran benchmarks:

mpif90

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



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Peak Other Flags

C benchmarks (except as noted below):

-Ispecmpitime -w

521.miniswp_t: -Ispecmpitime/ -w

534.hpgmgfv_t: -Ispecmpitime -w

C++ benchmarks:

-Ispecmpitime -w

Fortran benchmarks (except as noted below):

-w

519.clvleaf_t: -Ispecmpitime -w

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

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

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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEChpc2021 v1.1.7 on 2023-08-04 16:18:10-0400.

Report generated on 2025-06-06 13:12:31 by hpc2021 PDF formatter v112.

Originally published on 2023-10-18.