



SPEChpc™ 2021 Tiny Result

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Lenovo Global Technology

SPEChpc 2021_tny_base = 69.2

SPEChpc 2021_tny_peak = 69.4

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

hpc2021 License: 28

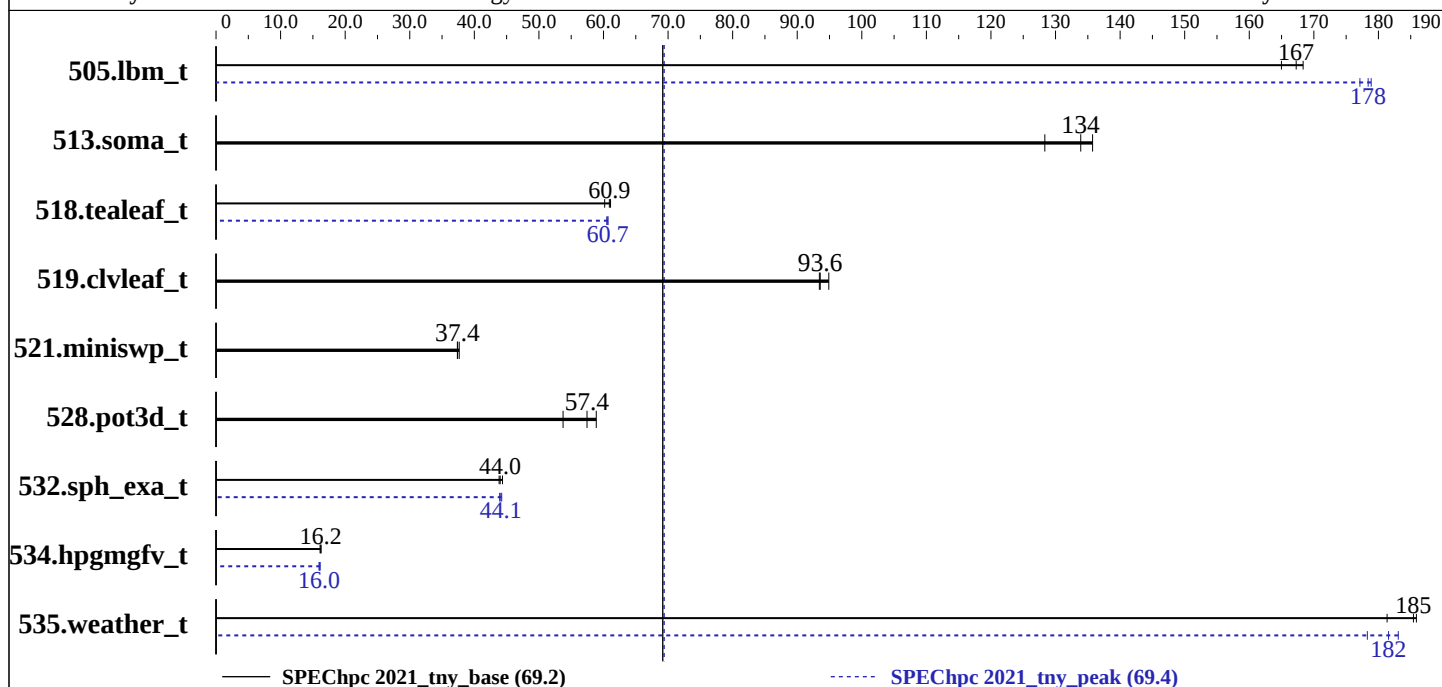
Test Sponsor: Lenovo Global Technology

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	7	1	13.6	165	13.5	167	13.4	168	ACC	7	1	12.7	177	12.6	178
513.soma_t	ACC	7	1	28.8	128	27.3	136	27.6	134	ACC	7	1	28.8	128	27.3	136
518.tealeaf_t	ACC	7	1	27.1	60.9	27.4	60.2	27.0	61.1	ACC	7	1	27.2	60.7	27.2	60.7
519.clvleaf_t	ACC	7	1	17.7	93.4	17.4	94.9	17.6	93.6	ACC	7	1	17.7	93.4	17.4	94.9
521.miniswp_t	ACC	7	1	42.8	37.4	42.5	37.7	42.8	37.4	ACC	7	1	42.8	37.4	42.5	37.7
528.pot3d_t	ACC	7	1	36.1	58.9	37.0	57.4	39.5	53.7	ACC	7	1	36.1	58.9	37.0	57.4
532.sph_exa_t	ACC	7	1	44.3	44.0	44.5	43.8	44.0	44.4	ACC	7	1	44.4	43.9	44.2	44.1
534.hpgmgfv_t	ACC	7	1	72.5	16.2	72.9	16.1	72.2	16.3	ACC	7	1	73.5	16.0	72.8	16.1
535.weather_t	ACC	7	1	17.3	186	17.8	181	17.4	185	ACC	7	1	18.1	178	17.6	183

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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: 7
Base Threads Run: 1
Peak Parallel Models: ACC
Minimum Peak Ranks: 7
Maximum Peak Ranks: 7
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

(Continued on next page)



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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.

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