



SPEChpc™ 2021 Tiny Result

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Lenovo Global Technology

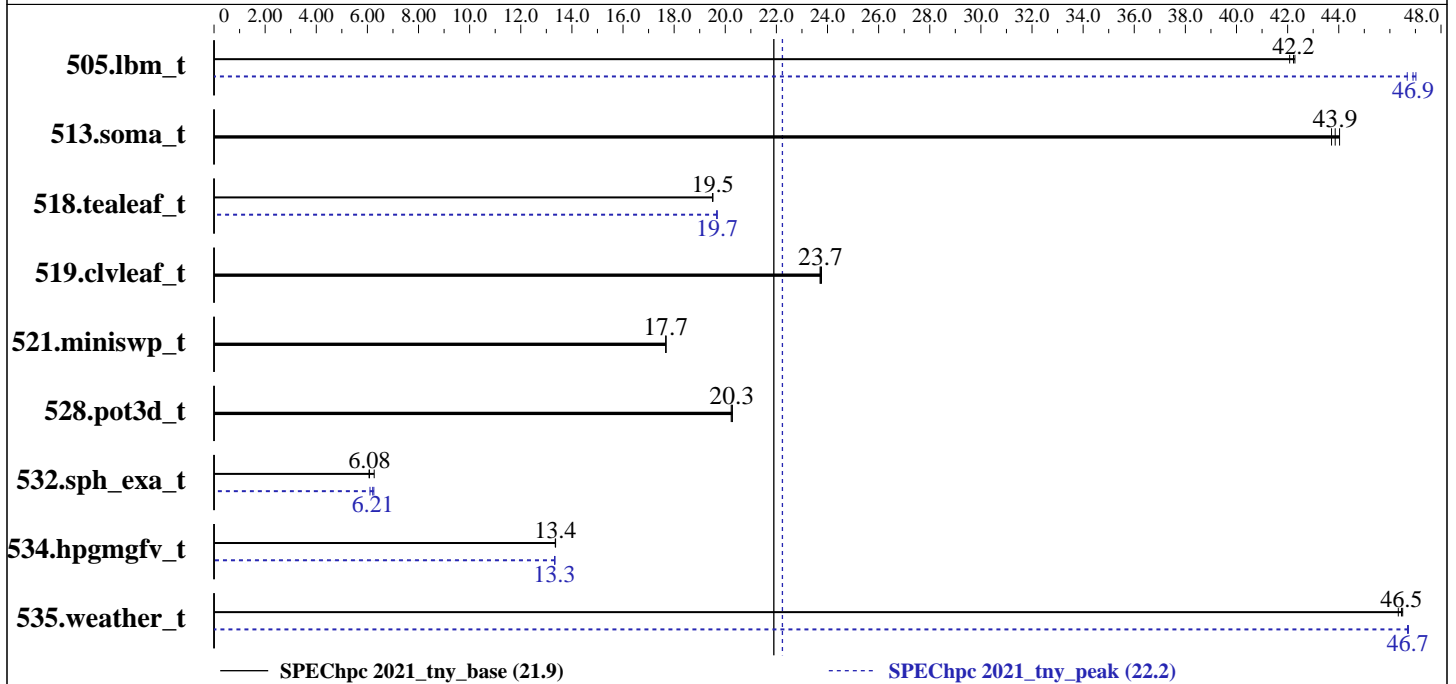
SPEChpc 2021_tny_base = 21.9

SPEChpc 2021_tny_peak = 22.2

ThinkSystem SD665-N V3 (AMD EPYC 9654, Nvidia H100-SXM5-80G)

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	1	1	53.5	42.1	53.3	42.2	53.2	42.3	ACC	1	1	48.2	46.7	47.9	47.0	48.0	46.9
513.soma_t	ACC	1	1	84.4	43.9	84.6	43.7	84.0	44.0	ACC	1	1	84.4	43.9	84.6	43.7	84.0	44.0
518.tealeaf_t	ACC	1	1	84.6	19.5	84.6	19.5	84.6	19.5	ACC	1	1	83.8	19.7	83.9	19.7	83.8	19.7
519.civleaf_t	ACC	1	1	69.4	23.8	69.5	23.7	69.6	23.7	ACC	1	1	69.4	23.8	69.5	23.7	69.6	23.7
521.miniswp_t	ACC	1	1	90.5	17.7	90.5	17.7	90.5	17.7	ACC	1	1	90.5	17.7	90.5	17.7	90.5	17.7
528.pot3d_t	ACC	1	1	105	20.3	105	20.2	105	20.3	ACC	1	1	105	20.3	105	20.2	105	20.3
532.sph_exa_t	ACC	1	1	321	6.08	311	6.27	321	6.07	ACC	1	1	312	6.25	320	6.10	314	6.21
534.hpgmgfv_t	ACC	1	1	88.0	13.4	88.0	13.4	87.9	13.4	ACC	1	1	88.1	13.3	88.2	13.3	88.2	13.3
535.weather_t	ACC	1	1	69.6	46.3	69.4	46.5	69.4	46.5	ACC	1	1	69.1	46.7	69.0	46.7	69.1	46.7

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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 SD665-N 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: 1
Base Threads Run: 1
Peak Parallel Models: ACC
Minimum Peak Ranks: 1
Maximum Peak Ranks: 1
Max. Peak Threads: 1
Min. Peak Threads: 1

Node Description: ThinkSystem SD665-N 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: 4
Accel Model: Tesla H100 SXM5 80GB
Accel Vendor: Nvidia Corporation
Accel Type: GPU
Accel Connection: PCIe Gen5 x16
Accel ECC enabled: Yes
Accel Description: Nvidia Tesla H100 SXM5 80GB
Adapter: Mellanox ConnectX-7 NDR
Number of Adapters: 1
Slot Type: PCI-Express 5.0 x16
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
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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:

-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

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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