**SPEChpc™ 2021 Tiny Result**

**Lenovo Global Technology**

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

**SPEChpc 2021_tny_base = 57.8**

**SPEChpc 2021_tny_peak = 58.3**

**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

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**Results Table**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Model</th>
<th>Ranks</th>
<th>Thrds/Rnk</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>ACC</td>
<td>4</td>
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<td>19.5</td>
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<td>65.1</td>
<td>25.4</td>
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<td>36.2</td>
<td>44.2</td>
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<td>41.1</td>
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<tr>
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SPEChpc 2021_tny_base = 57.8  
SPEChpc 2021_tny_peak = 58.3

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: 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 SR675 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
Lenovo Global Technology

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

SPEChpc 2021 tiny_base = 57.8
SPEChpc 2021 tiny_peak = 58.3

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
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
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Base Compiler Invocation

C benchmarks:
mpicc

C++ benchmarks:
mpicxx

Fortran benchmarks:
mpif90
**Lenovo Global Technology**

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

<table>
<thead>
<tr>
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<th>SPEChpc 2021_{tiny} peak</th>
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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  
- -Mnouniform  
- -Mstack_arrays  
- -fast  
- -acc=gpu  
- -Minfo=accel  
- -DSPEC_ACCEL_AWARE_MPI

_C++ benchmarks:_  
- -Mfprelaxed  
- -Mnouniform  
- -Mstack_arrays  
- -fast  
- -acc=gpu  
- -Minfo=accel  
- -DSPEC_ACCEL_AWARE_MPI

_Fortran benchmarks:_  
- -DSPEC_ACCEL_AWARE_MPI  
- -Mfprelaxed  
- -Mnouniform  
- -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
## Lenovo Global Technology

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

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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:  

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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