



SPEChpc™ 2021 Tiny Result

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NEC

(Test Sponsor: Helmholtz-Zentrum Dresden - Rossendorf)

SPEChpc 2021_tny_base = 4.11

Hemera: GIGABYTE H262-Z61 (AMD EPYC 7702)

SPEChpc 2021_tny_peak = Not Run

hpc2021 License: 065A

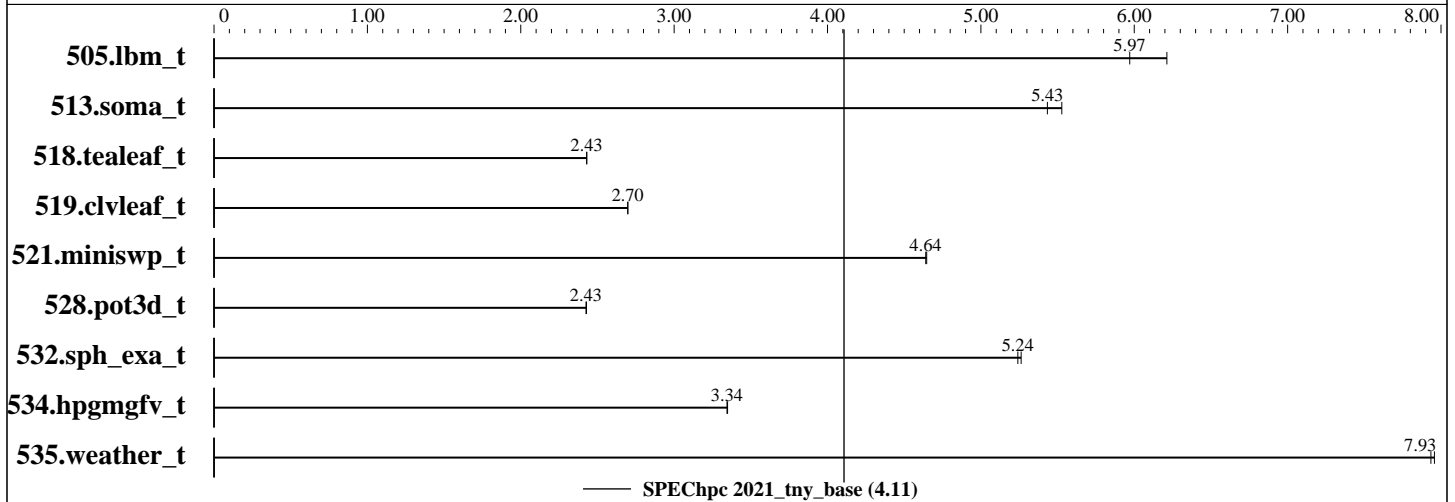
Test Sponsor: Helmholtz-Zentrum Dresden - Rossendorf

Tested by: Helmholtz-Zentrum Dresden - Rossendorf

Test Date: Sep-2021

Hardware Availability: Aug-2019

Software Availability: Jul-2021



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	OMP	32	4	362	6.21	377	5.97											
513.soma_t	OMP	32	4	669	5.53	681	5.43											
518.tealeaf_t	OMP	32	4	679	2.43	679	2.43											
519.clvleaf_t	OMP	32	4	612	2.70	611	2.70											
521.miniswp_t	OMP	32	4	345	4.64	344	4.65											
528.pot3d_t	OMP	32	4	876	2.43	875	2.43											
532.sph_exa_t	OMP	32	4	372	5.24	371	5.26											
534.hpgmgfv_t	OMP	32	4	351	3.34	351	3.35											
535.weather_t	OMP	32	4	405	7.96	406	7.93											

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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: Homogenous Cluster
Compute Node: Compute Node
Interconnect: Infiniband (EDR)
Compute Nodes Used: 1
Total Chips: 2
Total Cores: 64
Total Threads: 64
Total Memory: 512 GB
Max. Peak Threads: --

Software Summary

Compiler: C/C++/Fortran: Version 11.2 of GNU Compilers
MPI Library: OpenMPI Version 4.0.4
Other MPI Info: None
Other Software: None
Base Parallel Model: OMP
Base Ranks Run: 32
Base Threads Run: 4
Peak Parallel Models: Not Run
Minimum Peak Ranks: --
Maximum Peak Ranks: --
Max. Peak Threads: --
Min. Peak Threads: --

Node Description: Compute Node

Hardware

Number of nodes: 1
Uses of the node: compute
Vendor: Gigabyte
Model: H262-Z61
CPU Name: AMD EPYC 7702
CPU(s) orderable: 1 or 2 chips per node
Chips enabled: 2
Cores enabled: 64
Cores per chip: 64
Threads per core: 1
CPU Characteristics: Max Boost Clock up to 3.35 GHz
CPU MHz: 2000
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 512 KB I+D on chip per core
L3 Cache: 256 MB I+D on chip per chip
16 MB shared / 4 cores
Other Cache: None
Memory: 512 GB (16 x 32GB 2Rx4 PC4-3200AA-RB2-12-RB0)
Disk Subsystem: 1 x 500 GB SSD
Other Hardware: None
Accel Count: 0
Accel Model: --
Accel Vendor: --
Accel Type: --
Accel Connection: --
Accel ECC enabled: --
Accel Description: --
Adapter: Mellanox MT4119
Number of Adapters: 2
Slot Type: PCIe 4.0 16x
Data Rate: 100 Gb/s

Software

Accelerator Driver: --
Adapter: Mellanox MT4119
Adapter Driver: --
Adapter Firmware: 16.26.1040
Operating System: CentOS Linux release 7.9.2009 (Core)
3.10.0-1160.6.1.el7.x86_64
Local File System: xfs
Shared File System: GPFS Version 5.0.5.0
6 NSD (vendor: NEC)
5 building blocks (vendor: NetApp):
2x (240 x 8 TB HDD)
1x (180 x 12 TB HDD)
1x (240 x 16 TB HDD)
1x (120 x 16 TB HDD)
System State: Multi-user, run level 3
Other Software: None

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Node Description: Compute Node

Hardware (Continued)

Ports Used: 2
Interconnect Type: EDR Infiniband

Interconnect Description: Infiniband (EDR)

Hardware

Vendor: Mellanox Technologies
Model: Mellanox SB7790
Switch Model: 36 x EDR 100 Gb/s
Number of Switches: 2
Number of Ports: 36
Data Rate: 100 Gb/s
Firmware: --
Topology: Mesh (blocking factor: 8:1)
Primary Use: MPI Traffic, GPFS

Software

: --

Submit Notes

The config file option 'submit' was used.

MPI startup command:

```
mpirun --bind-to l3cache -npersocket 16 -np $ranks $command
```

Compiler Version Notes

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

GNU Fortran (GCC) 11.2.0

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```
=====
CXXC 532.sph_exa_t(base)
=====
```

g++ (GCC) 11.2.0

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Compiler Version Notes (Continued)

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

gcc (GCC) 11.2.0

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Base Compiler Invocation

C benchmarks:

mpicc

C++ benchmarks:

mpicxx

Fortran benchmarks:

mpif90

Base Portability Flags

521.miniswp_t: -DUSE_KBA -DUSE_ACCELDIR

532.sph_exa_t: -DSPEC_USE_LT_IN_KERNELS

Base Optimization Flags

C benchmarks:

-fopenmp -Ofast -march=native

C++ benchmarks:

-fopenmp -Ofast -march=native -std=c++14

Fortran benchmarks:

-fopenmp -Ofast -march=native -ffree-line-length-none

-fno-stack-protector



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

<http://www.spec.org/hpc2021/flags/gcc.2021-10-28.html>

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

<http://www.spec.org/hpc2021/flags/gcc.2021-10-28.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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