



# SPEChpc™ 2021 Tiny Result

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## NEC

(Test Sponsor: Helmholtz-Zentrum Dresden - Rossendorf)

SPEChpc 2021\_tny\_base = 0.7259

Hemera: GIGABYTE H262-Z61 (AMD EPYC 7702)

SPEChpc 2021\_tny\_peak = Not Run

hpc2021 License: 065A

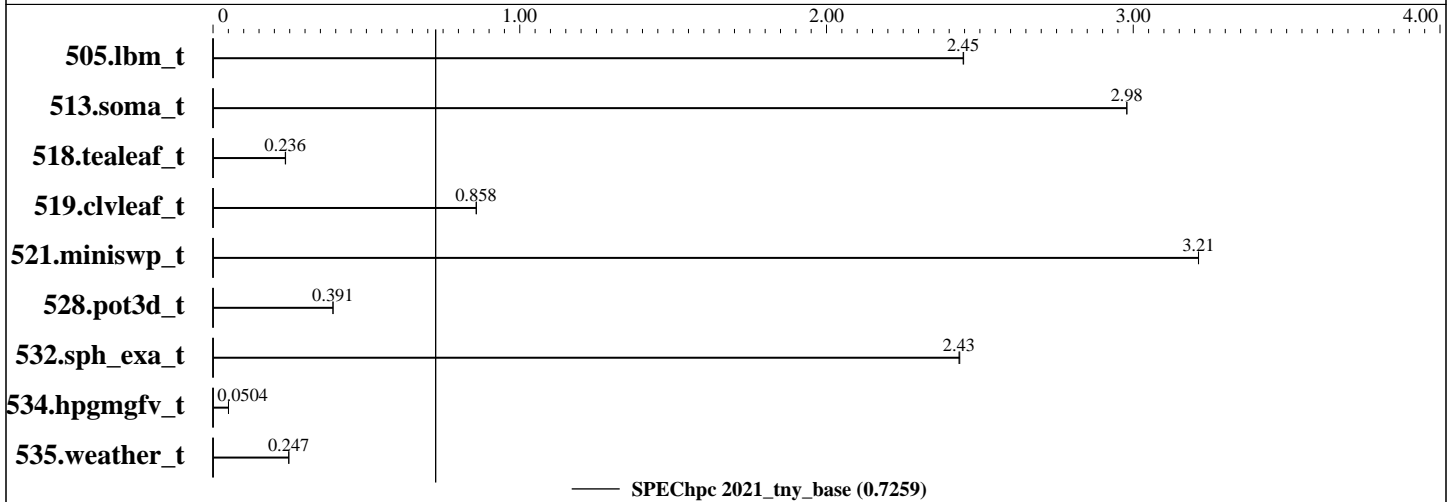
Test Sponsor: Helmholtz-Zentrum Dresden - Rossendorf

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	2	64	920	2.45	<b>920</b>	<b>2.45</b>											
513.soma_t	OMP	2	64	<b>1242</b>	<b>2.98</b>	1242	2.98											
518.tealeaf_t	OMP	2	64	<b>7002</b>	<b>0.236</b>	6977	0.237											
519.clvleaf_t	OMP	2	64	<b>1924</b>	<b>0.858</b>	1922	0.859											
521.miniswp_t	OMP	2	64	498	3.21	<b>498</b>	<b>3.21</b>											
528.pot3d_t	OMP	2	64	<b>5435</b>	<b>0.391</b>	5431	0.391											
532.sph_exa_t	OMP	2	64	<b>802</b>	<b>2.43</b>	801	2.43											
534.hpgmgfv_t	OMP	2	64	<b>23326</b>	<b>0.0504</b>	23316	0.0504											
535.weather_t	OMP	2	64	<b>13062</b>	<b>0.247</b>	13052	0.247											

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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: 2  
Base Threads Run: 64  
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 socket -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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warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

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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](mailto:info@spec.org).

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