SPEChpc™ 2021 Tiny Result

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Transtec

(Test Sponsor: Helmholtz-Zentrum Dresden - Rossendorf)

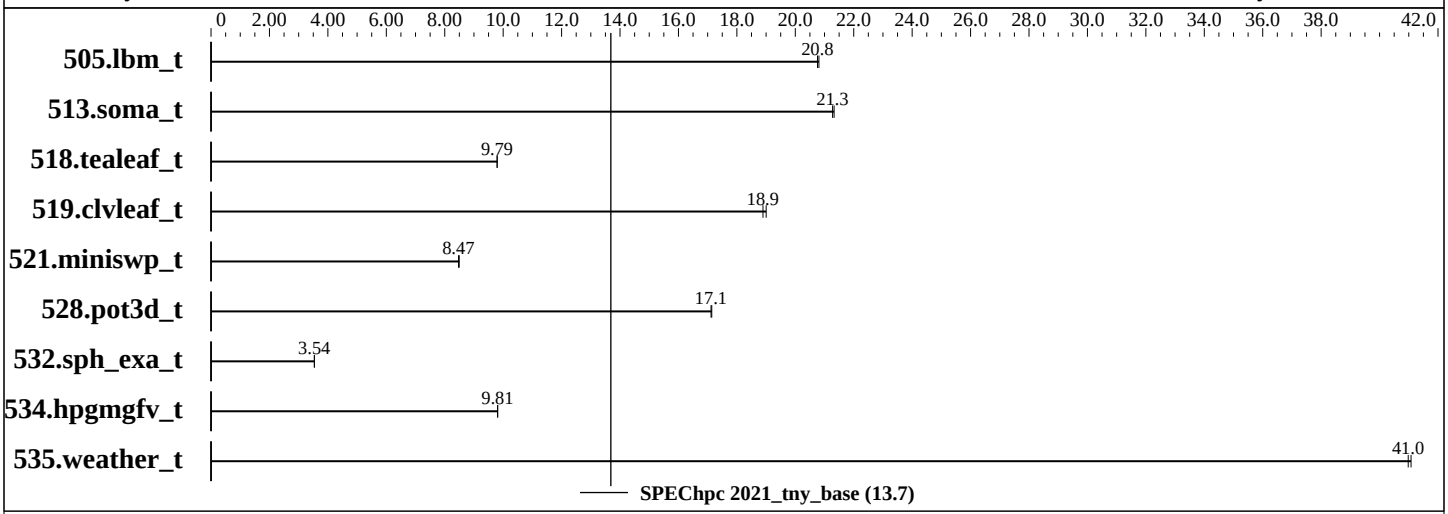
Hemera: Supermicro SuperServer 1029GQ-TXRT (Intel Xeon Gold 6136, Tesla P100-SXM2-16GB)

SPEChpc 2021_tny_base = 13.7

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: Jul-2017
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	ACC	4	1	**108**	**20.8**	108	20.8											
513.soma_t	ACC	4	1	173	21.3	**174**	**21.3**											
518.tealeaf_t	ACC	4	1	168	9.80	**168**	**9.79**											
519.clvleaf_t	ACC	4	1	**87.3**	**18.9**	86.8	19.0											
521.miniswp_t	ACC	4	1	188	8.50	**189**	**8.47**											
528.pot3d_t	ACC	4	1	**124**	**17.1**	124	17.1											
532.sph_exa_t	ACC	4	1	551	3.54	**551**	**3.54**											
534.hpgmgfv_t	ACC	4	1	**120**	**9.81**	120	9.81											
535.weather_t	ACC	4	1	78.5	41.1	**78.7**	**41.0**											

SPEChpc 2021_tny_base = **13.7**

SPEChpc 2021_tny_peak = **Not Run**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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Test Date: Sep-2021
Hardware Availability: Jul-2017
Software Availability: Jul-2021

Hardware Summary

Type of System:	Homogenous Cluster
Compute Node:	Compute Node
Interconnect:	Infiniband (EDR)
Compute Nodes Used:	1
Total Chips:	1
Total Cores:	12
Total Threads:	12
Total Memory:	384 GB
Max. Peak Threads:	--

Software Summary

Compiler:	C/C++/Fortran: Version 21.7 of NVIDIA HPC SDK for Linux
MPI Library:	OpenMPI Version 4.0.5
Other MPI Info:	None
Other Software:	None
Base Parallel Model:	ACC
Base Ranks Run:	4
Base Threads Run:	1
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:	Intel
Model:	SuperServer 1029GQ-TXRT
CPU Name:	Intel Xeon Gold 6136
CPU(s) orderable:	1 chips
Chips enabled:	1
Cores enabled:	12
Cores per chip:	12
Threads per core:	1
CPU Characteristics:	Intel Turbo Boost Technology up to 3.7 GHz
CPU MHz:	3000
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	25344 KB I+D on chip per chip
Other Cache:	None
Memory:	384 GB (12 x 32GB 2Rx4 PC4-2666V-RB2-12)
Disk Subsystem:	1 x 500 GB
Other Hardware:	None
Accel Count:	4
Accel Model:	Tesla P100-SXM2-16GB
Accel Vendor:	NVIDIA Corporation
Accel Type:	GPU
Accel Connection:	PCIe 3.0 16x
Accel ECC enabled:	Yes
Accel Description:	--
Adapter:	Mellanox MT4115
Number of Adapters:	2
Slot Type:	PCI-Express 3.0 x16
Data Rate:	100 Gb/s
Ports Used:	2

(Continued on next page)

Software

Accelerator Driver:	--
Adapter:	Mellanox MT4115
Adapter Driver:	--
Adapter Firmware:	12.28.2006
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

Node Description: Compute Node

Hardware (Continued)

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 $[top]/mpirunCUDA.sh $command
  contents of $[top]/mpirunCUDA.sh
    #!/bin/bash
    export CUDA_VISIBLE_DEVICES=$OMPI_COMM_WORLD_LOCAL_RANK
    $@
```

Compiler Version Notes

```
==============================================================================
 CC  505.lbm_t(base) 513.soma_t(base) 518.tealeaf_t(base) 521.miniswp_t(base)
     534.hpgmgfv_t(base)
------------------------------------------------------------------------------
nvc 21.7-0 64-bit target on x86-64 Linux -tp skylake
NVIDIA Compilers and Tools
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------------------------------------------------------------------------------

==============================================================================
 CXXC 532.sph_exa_t(base)
------------------------------------------------------------------------------
nvc++ 21.7-0 64-bit target on x86-64 Linux -tp skylake
NVIDIA Compilers and Tools
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```

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Compiler Version Notes (Continued)

```
------------------------------------------------------------------------------

==============================================================================
 FC  519.clvleaf_t(base) 528.pot3d_t(base) 535.weather_t(base)
------------------------------------------------------------------------------
nvfortran 21.7-0 64-bit target on x86-64 Linux -tp skylake
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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 --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`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/hpc2021/flags/nv2021_flags.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/hpc2021/flags/nv2021_flags.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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