



SPEChpc™ 2021 Small Result

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Transtec

(Test Sponsor: Helmholtz-Zentrum Dresden - Rossendorf)

SPEChpc 2021_sml_base = 9.75

SPEChpc 2021_sml_peak = Not Run

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

hpc2021 License: 065A

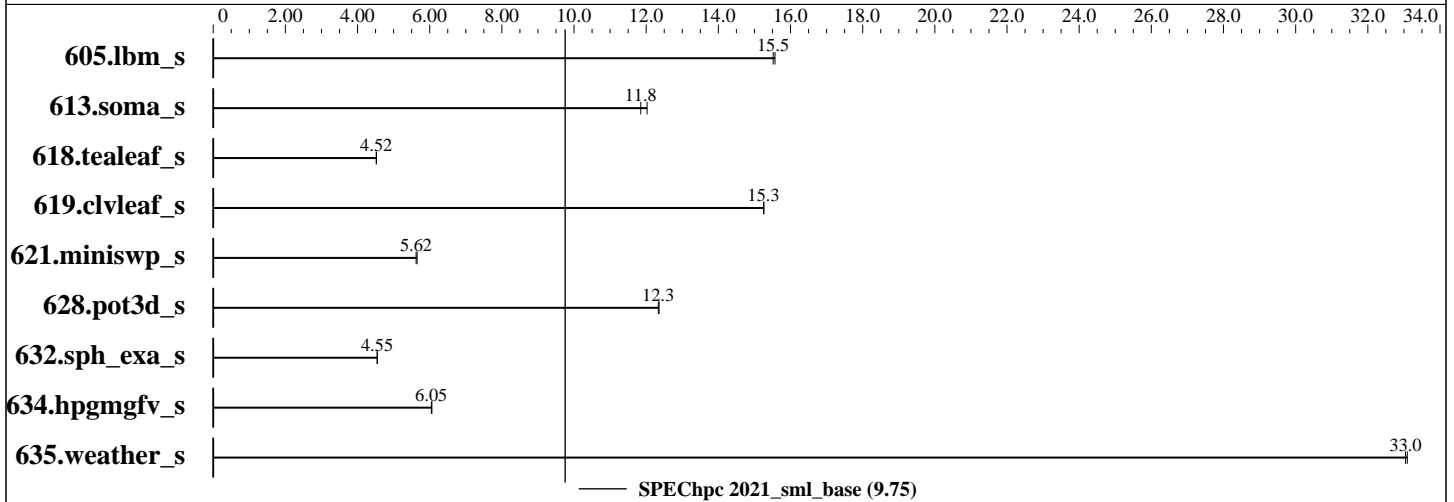
Test Date: Sep-2021

Test Sponsor: Helmholtz-Zentrum Dresden - Rossendorf

Hardware Availability: Jul-2017

Tested by: Helmholtz-Zentrum Dresden - Rossendorf

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
605.lbm_s	ACC	32	1	99.9	15.5	99.6	15.6											
613.soma_s	ACC	32	1	133	12.0	135	11.8											
618.tealeaf_s	ACC	32	1	453	4.52	453	4.52											
619.clvleaf_s	ACC	32	1	108	15.3	108	15.3											
621.miniswp_s	ACC	32	1	195	5.65	196	5.62											
628.pot3d_s	ACC	32	1	136	12.3	136	12.4											
632.sph_exa_s	ACC	32	1	506	4.55	506	4.55											
634.hpgmgfv_s	ACC	32	1	161	6.05	161	6.06											
635.weather_s	ACC	32	1	78.6	33.1	78.7	33.0											

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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: 8
 Total Chips: 8
 Total Cores: 96
 Total Threads: 96
 Total Memory: 3 TB
 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: 32
 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: 8
 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

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

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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 605.lbm_s(base) 613.soma_s(base) 618.tealeaf_s(base) 621.miniswp_s(base)  
634.hpgmgfv_s(base)  
=====
```

```
nvc 21.7-0 64-bit target on x86-64 Linux -tp skylake  
NVIDIA Compilers and Tools  
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=====
```

```
=====  
CXXC 632.sph_exa_s(base)  
=====
```

```
nvc++ 21.7-0 64-bit target on x86-64 Linux -tp skylake  
NVIDIA Compilers and Tools  
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Compiler Version Notes (Continued)

FC 619.clvleaf_s(base) 628.pot3d_s(base) 635.weather_s(base)

nvfortran 21.7-0 64-bit target on x86-64 Linux -tp skylake

NVIDIA Compilers and Tools

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Base Compiler Invocation

C benchmarks:

mpicc

C++ benchmarks:

mpicxx

Fortran benchmarks:

mpif90

Base Portability Flags

621.miniswp_s: -DUSE_KBA -DUSE_ACCELDIR

632.sph_exa_s: -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



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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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