SPEChpc™ 2021 Tiny Result

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xFusion

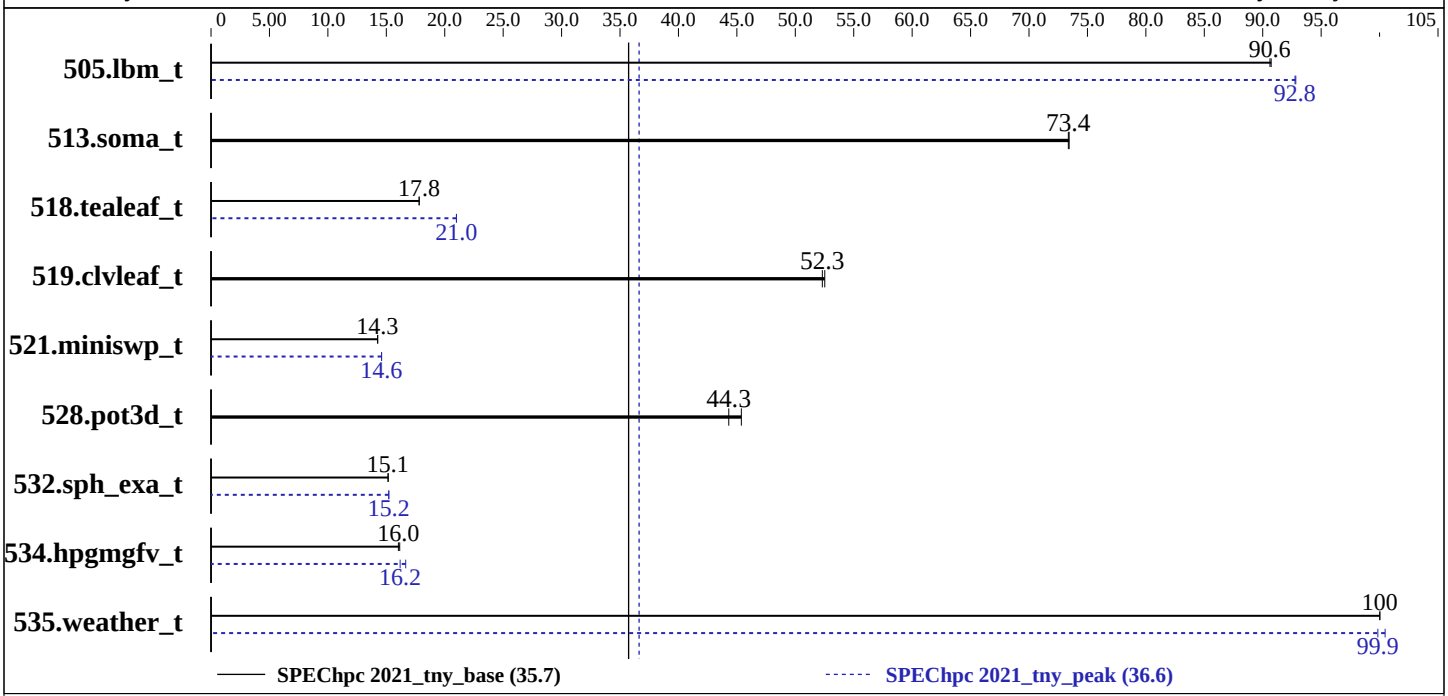
FusionServer G5500 V6 (Intel Xeon Platinum 8380, Nvidia A100-PCIE-80G)

SPEChpc 2021_tny_base = 35.7

SPEChpc 2021_tny_peak = 36.6

hpc2021 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

Test Date: Jul-2022
Hardware Availability: Apr-2021
Software Availability: May-2022



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	24.8	90.7	**24.8**	**90.6**			ACC	4	1	**24.3**	**92.8**	24.2	92.8		
513.soma_t	ACC	4	1	**50.4**	**73.4**	50.4	73.4			ACC	4	1	**50.4**	**73.4**	50.4	73.4		
518.tealeaf_t	ACC	4	1	**92.6**	**17.8**	92.6	17.8			ACC	4	1	78.6	21.0	**78.6**	**21.0**		
519.clvleaf_t	ACC	4	1	**31.5**	**52.3**	31.4	52.5			ACC	4	1	**31.5**	**52.3**	31.4	52.5		
521.miniswp_t	ACC	4	1	**112**	**14.3**	112	14.3			ACC	4	1	**110**	**14.6**	110	14.6		
528.pot3d_t	ACC	4	1	**48.0**	**44.3**	46.8	45.4			ACC	4	1	**48.0**	**44.3**	46.8	45.4		
532.sph_exa_t	ACC	4	1	129	15.2	**129**	**15.1**			ACC	4	1	128	15.2	**128**	**15.2**		
534.hpgmgfv_t	ACC	4	1	72.8	16.1	**73.3**	**16.0**			ACC	4	1	70.5	16.7	**72.6**	**16.2**		
535.weather_t	ACC	4	1	**32.2**	**100**	32.2	100			ACC	4	1	**32.3**	**99.9**	32.1	100		

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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:	SMP
Compute Node:	FusionServer G5500 V6
Interconnect:	None
Compute Nodes Used:	1
Total Chips:	2
Total Cores:	80
Total Threads:	80
Total Memory:	1 TB
Max. Peak Threads:	1

Software Summary

Compiler:	Nvidia HPC SDK 22.5
MPI Library:	OpenMPI Version 4.0.5, included with NVHPC SDK
Other MPI Info:	--
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: FusionServer G5500 V6

Hardware

Number of nodes:	1
Uses of the node:	compute
Vendor:	xFusion
Model:	FusionServer G5500 V6
CPU Name:	Intel Xeon Platinum 8380
CPU(s) orderable:	1, 2 chips
Chips enabled:	2
Cores enabled:	80
Cores per chip:	40
Threads per core:	1
CPU Characteristics:	Intel Turbo Boost Technology up to 3.4 GHz
CPU MHz:	2300
Primary Cache:	32 KB I + 48 KB D on chip per core
Secondary Cache:	1.25 MB I+D on chip per core
L3 Cache:	60 MB I+D on chip per chip
Other Cache:	None
Memory:	1 TB (16 x 64 GB 2Rx4 PC4-3200A-R)
Disk Subsystem:	1 x 3.2 TB NVMe SSD
Other Hardware:	None
Accel Count:	8
Accel Model:	Tesla A100 PCIe 80GB
Accel Vendor:	Nvidia Corporation
Accel Type:	GPU
Accel Connection:	PCIe Gen4 x16
Accel ECC enabled:	Yes
Accel Description:	Nvidia Tesla A100 PCIe 80GB
Adapter:	None
Number of Adapters:	0
Slot Type:	None
Data Rate:	None
Ports Used:	0
Interconnect Type:	None

Software

Accelerator Driver:	NVIDIA UNIX x86_64 Kernel Module 515.43.04
Adapter:	None
Adapter Driver:	None
Adapter Firmware:	None
Operating System:	CentOS Linux release 8.2.2004 4.18.0-193.el8.x86_644
Local File System:	xfs
Shared File System:	None
System State:	Multi-user, run level 3
Other Software:	None

Interconnect Description: None

Hardware		Software
Vendor:	None	: --
Model:	None	
Switch Model:	None	
Number of Switches:	0	
Number of Ports:	0	
Data Rate:	None	
Firmware:	None	
Topology:	None	
Primary Use:	None	

Submit Notes

```
The config file option 'submit' was used.
MPIRUN_OPTS = --allow-run-as-root --bind-to none
submit = mpirun --allow-run-as-root -x UCX_MEMTYPE_CACHE=n -np $ranks perl $[top]/bind.pl $command
```

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 22.5-0 64-bit target on x86-64 Linux -tp skylake-avx512
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------------------------------------------------------------------------------

==============================================================================
 CXXC 532.sph_exa_t(base, peak)
------------------------------------------------------------------------------
nvc++ 22.5-0 64-bit target on x86-64 Linux -tp skylake-avx512
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------------------------------------------------------------------------------

==============================================================================
 FC  519.clvleaf_t(base, peak) 528.pot3d_t(base, peak) 535.weather_t(base,
     peak)
------------------------------------------------------------------------------
nvfortran 22.5-0 64-bit target on x86-64 Linux -tp skylake-avx512
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------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
mpicc

C++ benchmarks:
mpicxx

Fortran benchmarks:
mpif90

Base Portability Flags

532.sph_exa_t: --c++17

Base Optimization Flags

C benchmarks:
-fast -acc=gpu -Mfprelaxed -Mnouniform -Mstack_arrays
-DSPEC_ACCEL_AWARE_MPI

C++ benchmarks:
-fast -acc=gpu -Mfprelaxed -Mnouniform -Mstack_arrays
-DSPEC_ACCEL_AWARE_MPI

Fortran benchmarks:
-DSPEC_ACCEL_AWARE_MPI -fast -acc=gpu -Mfprelaxed -Mnouniform
-Mstack_arrays

Base Other Flags

C benchmarks:
-w

C++ benchmarks:
-w

Fortran benchmarks:
-w

Peak Compiler Invocation

C benchmarks:
`mpicc`

C++ benchmarks:
`mpicxx`

Fortran benchmarks:
`mpif90`

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: `-fast -acc=gpu -gpu=pinned`

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`

(Continued on next page)

Peak Other Flags (Continued)

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_v1.0.3.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/hpc2021/flags/nv2021_flags_v1.0.3.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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