



# SPEChpc™ 2021 Tiny Result

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## xFusion

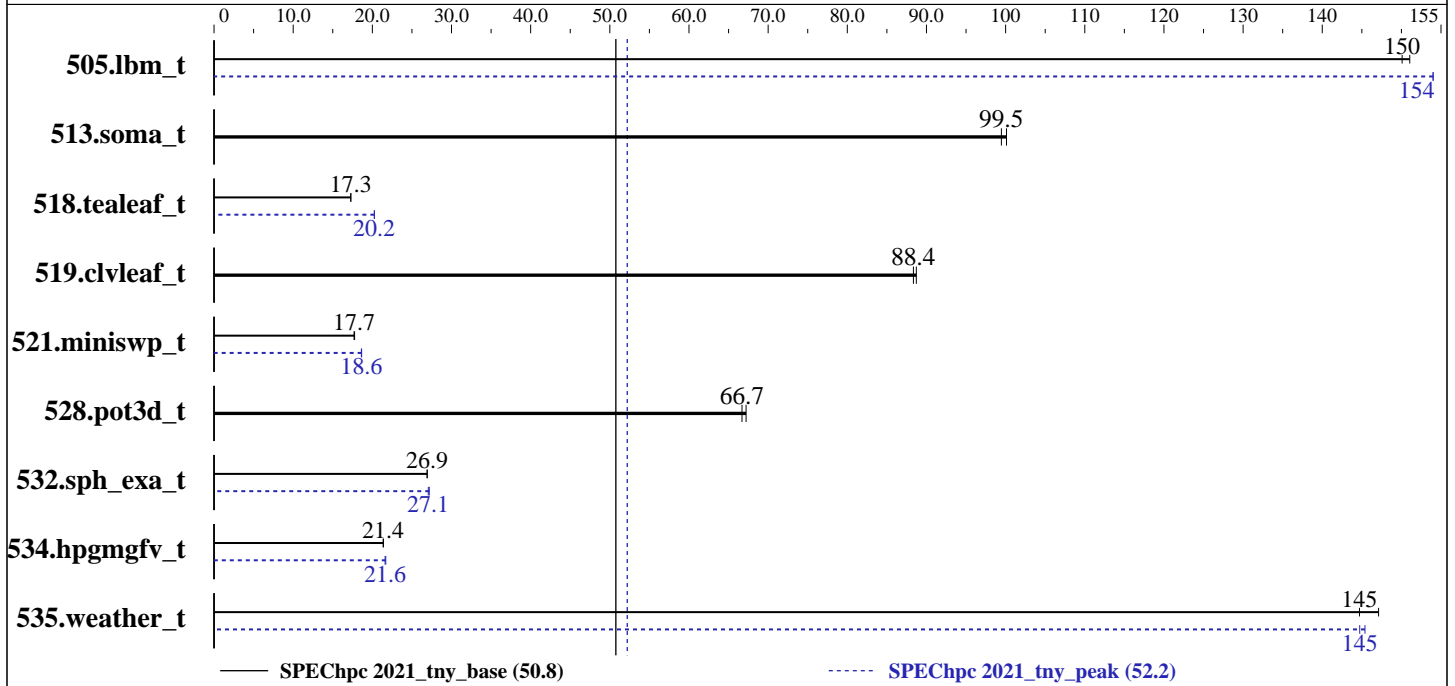
SPEChpc 2021\_tny\_base = 50.8

SPEChpc 2021\_tny\_peak = 52.2

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

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	8	1	<u>15.0</u>	<u>150</u>	14.9	151			ACC	8	1	<u>14.6</u>	<u>154</u>	14.6	154		
513.soma_t	ACC	8	1	<u>37.2</u>	<u>99.5</u>	37.0	100			ACC	8	1	<u>37.2</u>	<u>99.5</u>	37.0	100		
518.tealeaf_t	ACC	8	1	<u>95.5</u>	<u>17.3</u>	95.5	17.3			ACC	8	1	81.4	20.3	<u>81.5</u>	<u>20.2</u>		
519.clvleaf_t	ACC	8	1	<u>18.7</u>	<u>88.4</u>	18.6	88.7			ACC	8	1	<u>18.7</u>	<u>88.4</u>	18.6	88.7		
521.miniswp_t	ACC	8	1	<u>90.5</u>	<u>17.7</u>	90.1	17.8			ACC	8	1	<u>86.0</u>	<u>18.6</u>	85.8	18.6		
528.pot3d_t	ACC	8	1	31.6	67.2	<u>31.9</u>	<u>66.7</u>			ACC	8	1	31.6	67.2	<u>31.9</u>	<u>66.7</u>		
532.sph_exa_t	ACC	8	1	<u>72.4</u>	<u>26.9</u>	72.4	26.9			ACC	8	1	<u>72.0</u>	<u>27.1</u>	71.7	27.2		
534.hpgmgfv_t	ACC	8	1	<u>55.0</u>	<u>21.4</u>	54.9	21.4			ACC	8	1	54.2	21.7	<u>54.4</u>	<u>21.6</u>		
535.weather_t	ACC	8	1	21.9	147	<u>22.3</u>	<u>145</u>			ACC	8	1	<u>22.3</u>	<u>145</u>	22.2	145		

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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: 8  
Base Threads Run: 1  
Peak Parallel Models: ACC  
Minimum Peak Ranks: 8  
Maximum Peak Ranks: 8  
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\_64  
Local File System: xfs  
Shared File System: None  
System State: Multi-user, run level 3  
Other Software: None



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### 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  
NVIDIA Compilers and Tools  
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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  
NVIDIA Compilers and Tools  
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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



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## 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

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## 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](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](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](mailto:info@spec.org).

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