



# SPEChpc™ 2021 Tiny Result

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## xFusion

SPEChpc 2021\_tny\_base = 34.7

SPEChpc 2021\_tny\_peak = 35.9

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

hpc2021 License: 6488

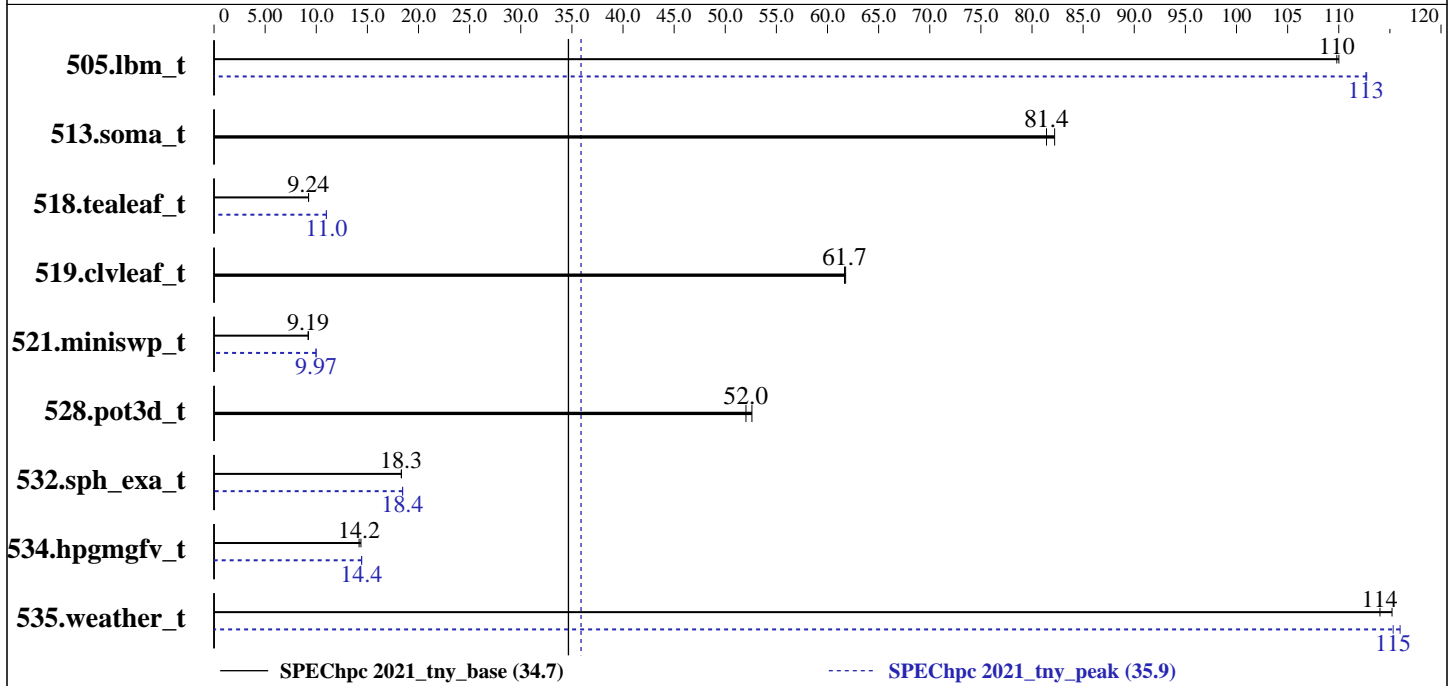
Test Sponsor: xFusion

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	5	1	<b>20.5</b>	<b>110</b>	20.5	110			ACC	5	1	20.0	113	<b>20.0</b>	<b>113</b>		
513.soma_t	ACC	5	1	45.0	82.2	<b>45.4</b>	<b>81.4</b>			ACC	5	1	45.0	82.2	<b>45.4</b>	<b>81.4</b>		
518.tealeaf_t	ACC	5	1	178	9.25	<b>178</b>	<b>9.24</b>			ACC	5	1	<b>150</b>	<b>11.0</b>	150	11.0		
519.civleaf_t	ACC	5	1	<b>26.8</b>	<b>61.7</b>	26.7	61.8			ACC	5	1	<b>26.8</b>	<b>61.7</b>	26.7	61.8		
521.miniswp_t	ACC	5	1	<b>174</b>	<b>9.19</b>	173	9.24			ACC	5	1	<b>160</b>	<b>9.97</b>	160	9.98		
528.pot3d_t	ACC	5	1	<b>40.8</b>	<b>52.0</b>	40.4	52.6			ACC	5	1	<b>40.8</b>	<b>52.0</b>	40.4	52.6		
532.sph_exa_t	ACC	5	1	<b>106</b>	<b>18.3</b>	106	18.3			ACC	5	1	106	18.5	<b>106</b>	<b>18.4</b>		
534.hpgmgfv_t	ACC	5	1	81.8	14.4	<b>82.8</b>	<b>14.2</b>			ACC	5	1	<b>81.4</b>	<b>14.4</b>	81.4	14.4		
535.weather_t	ACC	5	1	<b>28.3</b>	<b>114</b>	28.0	115			ACC	5	1	27.8	116	<b>28.0</b>	<b>115</b>		

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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: 5  
Base Threads Run: 1  
Peak Parallel Models: ACC  
Minimum Peak Ranks: 5  
Maximum Peak Ranks: 5  
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.hpmgfv_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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