



# SPEChpc™ 2021 Tiny Result

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## xFusion

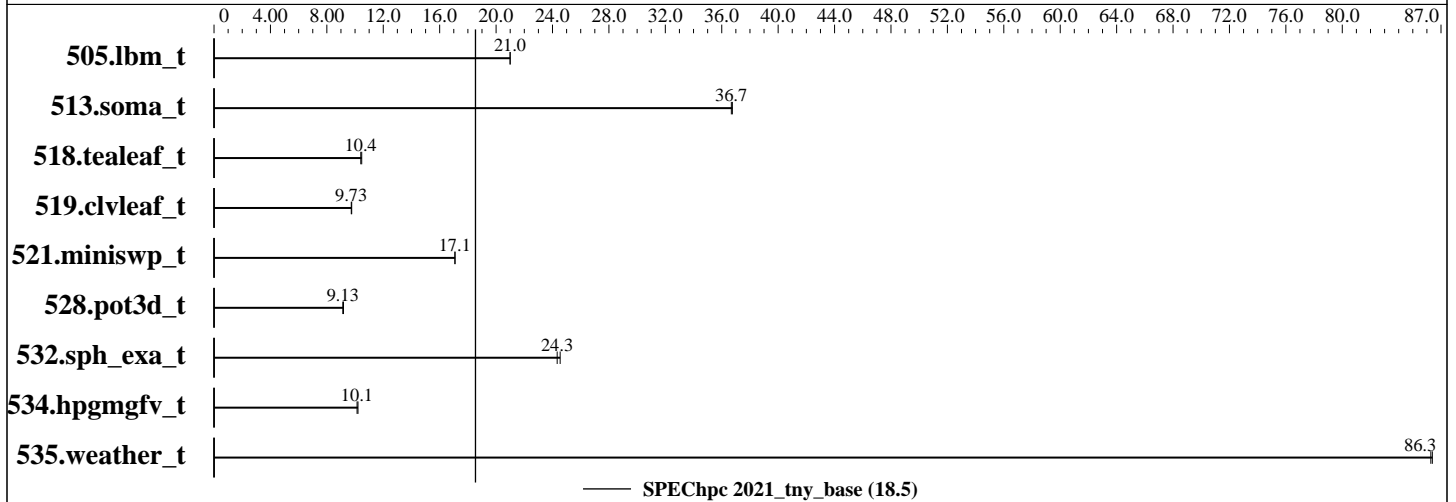
SPEChpc 2021\_tny\_base = 18.5

SPEChpc 2021\_tny\_peak = Not Run

xFusion FusionServer 2288H V7 (Intel Xeon Platinum 8490H)

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

**Test Date:** Apr-2023  
**Hardware Availability:** Jan-2023  
**Software Availability:** Nov-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	OMP	16	30	107	21.0	<b>107</b>	<b>21.0</b>											
513.soma_t	OMP	16	30	101	36.8	<b>101</b>	<b>36.7</b>											
518.tealeaf_t	OMP	16	30	<b>159</b>	<b>10.4</b>	158	10.5											
519.cvlleaf_t	OMP	16	30	<b>170</b>	<b>9.73</b>	169	9.76											
521.miniswp_t	OMP	16	30	<b>93.7</b>	<b>17.1</b>	93.6	17.1											
528.pot3d_t	OMP	16	30	<b>233</b>	<b>9.13</b>	231	9.18											
532.sph_exa_t	OMP	16	30	<b>80.1</b>	<b>24.3</b>	79.5	24.5											
534.hpgmgfv_t	OMP	16	30	<b>116</b>	<b>10.1</b>	115	10.2											
535.weather_t	OMP	16	30	37.3	86.4	<b>37.4</b>	<b>86.3</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: Homogenous Cluster  
Compute Node: xFusion FusionServer 2288H V7  
Interconnect: Mellanox HDR  
Node Node: xFusion FusionServer 2288H V7  
Compute Nodes Used: 2  
Total Chips: 4  
Total Cores: 240  
Total Threads: 480  
Total Memory: 1 TB  
Max. Peak Threads: --

### Software Summary

Compiler: C/C++/Fortran: Version 2022.2.1 of Intel oneAPI Compiler  
MPI Library: Intel MPI Library for Linux\* OS, Version 2022.2.1 Build 20221020  
Other MPI Info: N/A  
Other Software: N/A  
Base Parallel Model: OMP  
Base Ranks Run: 16  
Base Threads Run: 30  
Peak Parallel Models: Not Run  
Minimum Peak Ranks: --  
Maximum Peak Ranks: --  
Max. Peak Threads: --  
Min. Peak Threads: --

## Node Description: xFusion FusionServer 2288H V7

### Hardware

Number of nodes: 2  
Uses of the node: Compute Node  
Vendor: xFusion  
Model: xFusion FusionServer 2288H V7  
CPU Name: Intel Xeon Platinum 8490H  
CPU(s) orderable: 2 chips  
Chips enabled: 2  
Cores enabled: 120  
Cores per chip: 60  
Threads per core: 2  
CPU Characteristics: Turbo Boost Technology up to 3.5 GHz  
CPU MHz: 1900  
Primary Cache: 32 KB I + 48 KB D on chip per core  
Secondary Cache: 2 MB I+D on chip per core  
L3 Cache: 112.5 MB I+D on chip per chip  
Other Cache: None  
Memory: 512 GB (16 x 32 GB 2Rx4 PC5-4800B-R)  
Disk Subsystem: 1 x 7.68 TB NVMe SSD  
Other Hardware: None  
Accel Count: N/A  
Accel Model: N/A  
Accel Vendor: N/A  
Accel Type: N/A  
Accel Connection: N/A  
Accel ECC enabled: N/A  
Accel Description: N/A  
Adapter: MCX653105A-EFAT  
Number of Adapters: 1  
Slot Type: PCI-Express 4.0 x16  
Data Rate: 100 Gb/s

### Software

Accelerator Driver: N/A  
Adapter: MCX653105A-EFAT  
Adapter Driver: 5.4-3.1.0  
Adapter Firmware: 20.32.1010  
Operating System: CentOS Linux release 8.2.2004 4.18.0-193.el8.x86\_644  
Local File System: xfs  
Shared File System: NFS  
System State: Multi-user, run level 3  
Other Software: N/A

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### Node Description: xFusion FusionServer 2288H V7

#### Hardware (Continued)

Ports Used: 1  
Interconnect Type: Mellanox HDR

### Interconnect Description: Mellanox HDR

#### Hardware

Vendor: Mellanox  
Model: Mellanox HDR  
Switch Model: Mellanox MQM8790-HS2F  
InfiniBand Switch  
Number of Switches: 1  
Number of Ports: 40  
Data Rate: 200 Gbit/s  
Firmware: 27.2010.1202  
Topology: Mesh  
Primary Use: MPI

#### Software

: --

### Submit Notes

The config file option 'submit' was used.  
export LD\_PRELOAD="/usr/lib64/libhugetlbfs.so \$LD\_PRELOAD"  
export OMP\_PROC\_BIND=true  
mpirun.hydra -bootstrap ssh --bind-to core -hostfile \${top}/\${hostfile} -np \$ranks -ppn \$ppn -genv OMP\_NUM\_THREADS=\$threads \$command

### Compiler Version Notes

=====  
CC 505.lbm\_t(base) 513.soma\_t(base) 518.tealeaf\_t(base) 521.miniswp\_t(base)  
534.hpgmgfv\_t(base)  
-----

Intel(R) oneAPI DPC++/C++ Compiler 2022.1.0 (2022.1.0.20220316)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /nfsshare/opt/intel/2022.2.0/compiler/latest/linux/bin-llvm  
-----

=====  
CXXC 532.sph\_exa\_t(base)  
-----

Intel(R) oneAPI DPC++/C++ Compiler 2022.1.0 (2022.1.0.20220316)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix

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### Compiler Version Notes (Continued)

InstalledDir: /nfsshare/opt/intel/2022.2.0/compiler/latest/linux/bin-llvm

=====  
FC 519.clvleaf\_t(base) 535.weather\_t(base)

-----  
ifx (IFORT) 2022.1.0 20220316  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

=====  
FC 528.pot3d\_t(base)

-----  
ifx: command line warning #10157: ignoring option '-W'; argument is of wrong  
type  
ifx (IFORT) 2022.1.0 20220316  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

### Base Compiler Invocation

C benchmarks:  
mpiicc -cc=icx  
  
C++ benchmarks:  
mpiicpc -cxx=icpx  
  
Fortran benchmarks:  
mpiifort -fc=ifx

### Base Portability Flags

505.lbm\_t: -lstdc++  
513.soma\_t: -lstdc++ -DSPEC\_NO\_VAR\_ARRAY\_REDUCE  
518.tealeaf\_t: -lstdc++  
519.clvleaf\_t: -lstdc++  
521.miniswp\_t: -lstdc++  
528.pot3d\_t: -lstdc++  
532.sph\_exa\_t: -lstdc++  
534.hpgmgfv\_t: -lstdc++  
535.weather\_t: -lstdc++



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## Base Optimization Flags

C benchmarks:

-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp  
-ansi-alias

C++ benchmarks:

-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp  
-ansi-alias

Fortran benchmarks:

-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp  
-nostandard-realloc-lhs -align array64byte

## Base Other Flags

C benchmarks (except as noted below):

-Ispecmpitime

521.miniswp\_t: -Ispecmpitime/

534.hpgmgfv\_t: -Ispecmpitime

C++ benchmarks:

-Ispecmpitime

Fortran benchmarks:

519.clvleaf\_t: -Ispecmpitime

528.pot3d\_t: -Wno-incompatible-function-pointer-types

535.weather\_t: No flags used

The flags file that was used to format this result can be browsed at

[http://www.spec.org/hpc2021/flags/Intel\\_compiler\\_flags.2023-02-09.html](http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2023-02-09.html)

You can also download the XML flags source by saving the following link:

[http://www.spec.org/hpc2021/flags/Intel\\_compiler\\_flags.2023-02-09.xml](http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2023-02-09.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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