



# SPEChpc™ 2021 Small Result

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## xFusion

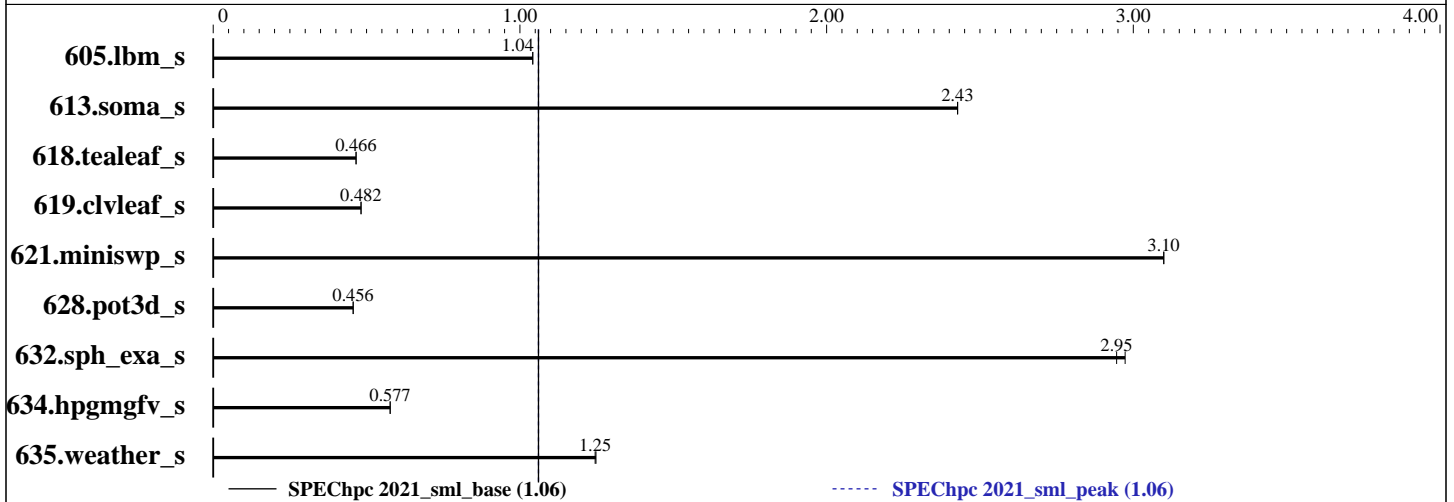
SPEChpc 2021\_sml\_base = 1.06

xFusion 2288H V7 (Intel Xeon Platinum 8490H)

SPEChpc 2021\_sml\_peak = 1.06

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

Test Date: Jan-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
605.lbm_s	OMP	8	30	<b>1488</b>	<b>1.04</b>	1487	1.04			OMP	8	30	<b>1488</b>	<b>1.04</b>	1487	1.04		
613.soma_s	OMP	8	30	659	2.43	<b>659</b>	<b>2.43</b>			OMP	8	30	659	2.43	<b>659</b>	<b>2.43</b>		
618.tealeaf_s	OMP	8	30	<b>4402</b>	<b>0.466</b>	4400	0.466			OMP	8	30	<b>4402</b>	<b>0.466</b>	4400	0.466		
619.clvleaf_s	OMP	8	30	<b>3424</b>	<b>0.482</b>	3422	0.482			OMP	8	30	<b>3424</b>	<b>0.482</b>	3422	0.482		
621.miniswp_s	OMP	8	30	<b>355</b>	<b>3.10</b>	355	3.10			OMP	8	30	<b>355</b>	<b>3.10</b>	355	3.10		
628.pot3d_s	OMP	8	30	<b>3671</b>	<b>0.456</b>	3670	0.456			OMP	8	30	<b>3671</b>	<b>0.456</b>	3670	0.456		
632.sph_exa_s	OMP	8	30	774	2.97	<b>781</b>	<b>2.95</b>			OMP	8	30	774	2.97	<b>781</b>	<b>2.95</b>		
634.hpgmgfv_s	OMP	8	30	1690	0.577	<b>1690</b>	<b>0.577</b>			OMP	8	30	1690	0.577	<b>1690</b>	<b>0.577</b>		
635.weather_s	OMP	8	30	<b>2088</b>	<b>1.25</b>	2083	1.25			OMP	8	30	<b>2088</b>	<b>1.25</b>	2083	1.25		

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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 2288H V7  
Interconnect: N/A  
Compute Nodes Used: 1  
Total Chips: 2  
Total Cores: 120  
Total Threads: 240  
Total Memory: 1 TB  
Max. Peak Threads: 30

### Software Summary

Compiler: Intel oneAPI Compiler 2022.2.1  
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: 8  
Base Threads Run: 30  
Peak Parallel Models: OMP  
Minimum Peak Ranks: 8  
Maximum Peak Ranks: 8  
Max. Peak Threads: 30  
Min. Peak Threads: 30

## Node Description: xFusion 2288H V7

### Hardware

Number of nodes: 1  
Uses of the node: Compute  
Vendor: xFusion  
Model: xFusion 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: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)  
Disk Subsystem: 1 x 7.68 TB NVMe SSD  
Other Hardware: None  
Accel Count: --  
Accel Model: --  
Accel Vendor: --  
Accel Type: --  
Accel Connection: --  
Accel ECC enabled: --  
Accel Description: --  
Adapter: N/A  
Number of Adapters: 0  
Slot Type: N/A  
Data Rate: N/A  
Ports Used: 0

### Software

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

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## Node Description: xFusion 2288H V7

### Hardware (Continued)

Interconnect Type: N/A

## Interconnect Description: N/A

### Hardware

Vendor: N/A  
Model: N/A  
Switch Model: N/A  
Number of Switches: 0  
Number of Ports: 0  
Data Rate: N/A  
Firmware: N/A  
Topology: N/A  
Primary Use: N/A

### Software

: --

## Submit Notes

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

## General Notes

Submitted\_by: luxu <luxu@xfusion.com>  
Submitted: Thu Jan 26 12:25:09 EST 2023  
Submission: hpc2021-20230110-00159.sub

## Compiler Version Notes

=====  
CC 605.lbm\_s(base) 613.soma\_s(base) 618.tealeaf\_s(base) 621.miniswp\_s(base)  
634.hpgmgfv\_s(base)  
-----

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

CXXC 632.sph\_exa\_s(base)

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

=====  
FC 619.clvleaf\_s(base) 628.pot3d\_s(base) 635.weather\_s(base)  
-----

ifx (IFORT) 2022.1.0 20220316  
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### Base Compiler Invocation

C benchmarks:  
mpiicc -cc=icx

C++ benchmarks:  
mpiicpc -cxx=icx

Fortran benchmarks:  
mpiifort -fc=ifx

### Base Portability Flags

605.lbm\_s: -lstdc++  
613.soma\_s: -lstdc++ -DSPEC\_NO\_VAR\_ARRAY\_REDUCE  
618.tealeaf\_s: -lstdc++  
619.clvleaf\_s: -lstdc++  
621.miniswp\_s: -lstdc++  
628.pot3d\_s: -lstdc++  
632.sph\_exa\_s: -lstdc++  
634.hpgmgfv\_s: -lstdc++  
635.weather\_s: -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:

-Ispecmpitime

C++ benchmarks:

-Ispecmpitime

Fortran benchmarks:

619.clvleaf\_s: -Ispecmpitime

## Peak Optimization Flags

C benchmarks:

605.lbm\_s: basepeak = yes

613.soma\_s: basepeak = yes

618.tealeaf\_s: basepeak = yes

621.miniswp\_s: basepeak = yes

634.hpgmgfv\_s: basepeak = yes

C++ benchmarks:

632.sph\_exa\_s: basepeak = yes

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## Peak Optimization Flags (Continued)

Fortran benchmarks:

619.clvleaf\_s: basepeak = yes

628.pot3d\_s: basepeak = yes

635.weather\_s: basepeak = yes

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

<http://www.spec.org/hpc2021/flags/Intel-oneAPI-icx2021-official-linux64.2023-01-27.html>

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

<http://www.spec.org/hpc2021/flags/Intel-oneAPI-icx2021-official-linux64.2023-01-27.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).

Tested with SPEChpc2021 v1.1.7 on 2023-01-08 02:38:28-0500.  
Report generated on 2023-01-27 19:55:19 by hpc2021 PDF formatter v1.0.3.  
Originally published on 2023-01-27.