SPEChpc™ 2021 Tiny Result

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xFusion

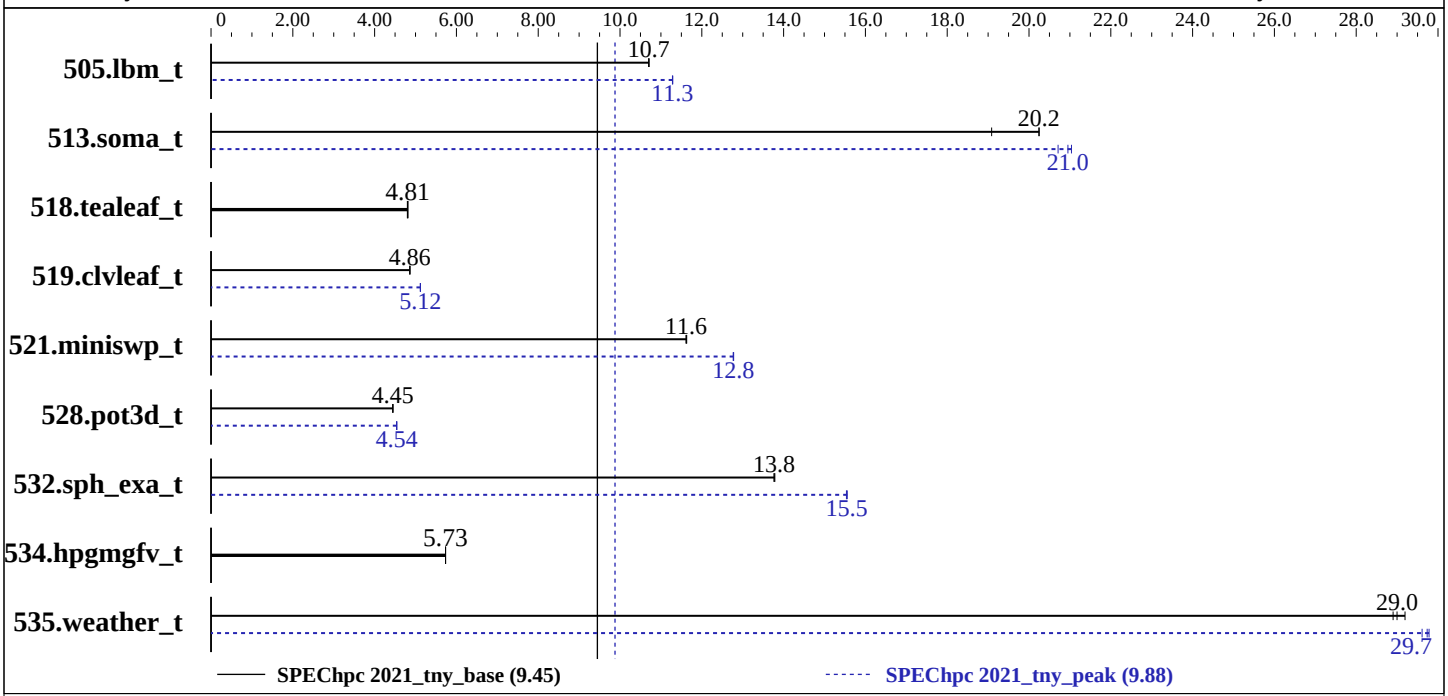
xFusion 2288H V7 (Intel Xeon Platinum 8490H)

SPEChpc 2021_tny_base = 9.45

SPEChpc 2021_tny_peak = 9.88

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
505.lbm_t	OMP	8	30	210	10.7	**210**	**10.7**	210	10.7	OMP	60	4	**199**	**11.3**	199	11.3	199	11.3
513.soma_t	OMP	8	30	183	20.2	194	19.1	**183**	**20.2**	OMP	2	120	**177**	**21.0**	176	21.0	179	20.7
518.tealeaf_t	OMP	8	30	**343**	**4.81**	343	4.82	344	4.80	OMP	8	30	**343**	**4.81**	343	4.82	344	4.80
519.clvleaf_t	OMP	8	30	339	4.86	339	4.86	**339**	**4.86**	OMP	60	4	322	5.12	322	5.12	**322**	**5.12**
521.miniswp_t	OMP	8	30	138	11.6	**138**	**11.6**	138	11.6	OMP	4	60	**125**	**12.8**	125	12.8	125	12.8
528.pot3d_t	OMP	8	30	478	4.44	**478**	**4.45**	478	4.45	OMP	120	2	**468**	**4.54**	468	4.54	469	4.54
532.sph_exa_t	OMP	8	30	141	13.8	142	13.8	**142**	**13.8**	OMP	30	8	126	15.5	**125**	**15.5**	125	15.6
534.hpgmgfv_t	OMP	8	30	205	5.73	**205**	**5.73**	205	5.73	OMP	8	30	205	5.73	**205**	**5.73**	205	5.73
535.weather_t	OMP	8	30	112	28.9	110	29.2	**111**	**29.0**	OMP	40	6	109	29.6	108	29.8	**108**	**29.7**

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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:	120

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:	2
Maximum Peak Ranks:	120
Max. Peak Threads:	120
Min. Peak Threads:	2

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

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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

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
mpiexec.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: hpc2021-20230108-00156.sub
```

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)
------------------------------------------------------------------------------
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 532.sph_exa_t(base, peak)
------------------------------------------------------------------------------
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  519.clvleaf_t(base, peak) 528.pot3d_t(base, peak) 535.weather_t(base,
      peak)
------------------------------------------------------------------------------
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=icx`

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++`

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`

Peak Compiler Invocation

C benchmarks:
`mpiicc -cc=icx`

C++ benchmarks:
`mpiicpc -cxx=icx`

Fortran benchmarks:
`mpiifort -fc=ifx`

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

505.lbm_t: -Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp -ansi-alias

513.soma_t: Same as 505.lbm_t

518.tealeaf_t: basepeak = yes

521.miniswp_t: Same as 505.lbm_t

534.hpgmgfv_t: basepeak = yes

C++ benchmarks:
-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -ffast-math -fiopenmp -ansi-alias

Fortran benchmarks:

519.clvleaf_t: -Ofast -ipo -xCORE-AVX512 -mllvm -hir-nontemporal-cacheline-count=0 -fiopenmp -nostandard-realloc-lhs -align array64byte

528.pot3d_t: -Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp -nostandard-realloc-lhs -align array64byte

535.weather_t: Same as 528.pot3d_t

Peak Other Flags

C benchmarks (except as noted below):
-Ispecmpitime

521.miniswp_t: -Ispecmpitime/

534.hpgmgfv_t: -Ispecmpitime

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Peak Other Flags (Continued)

C++ benchmarks:
`-Ispecmpitime`

Fortran benchmarks:

519.clvleaf_t: `-Ispecmpitime`

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.

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