SPEChpc™ 2021 Small Result

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xFusion

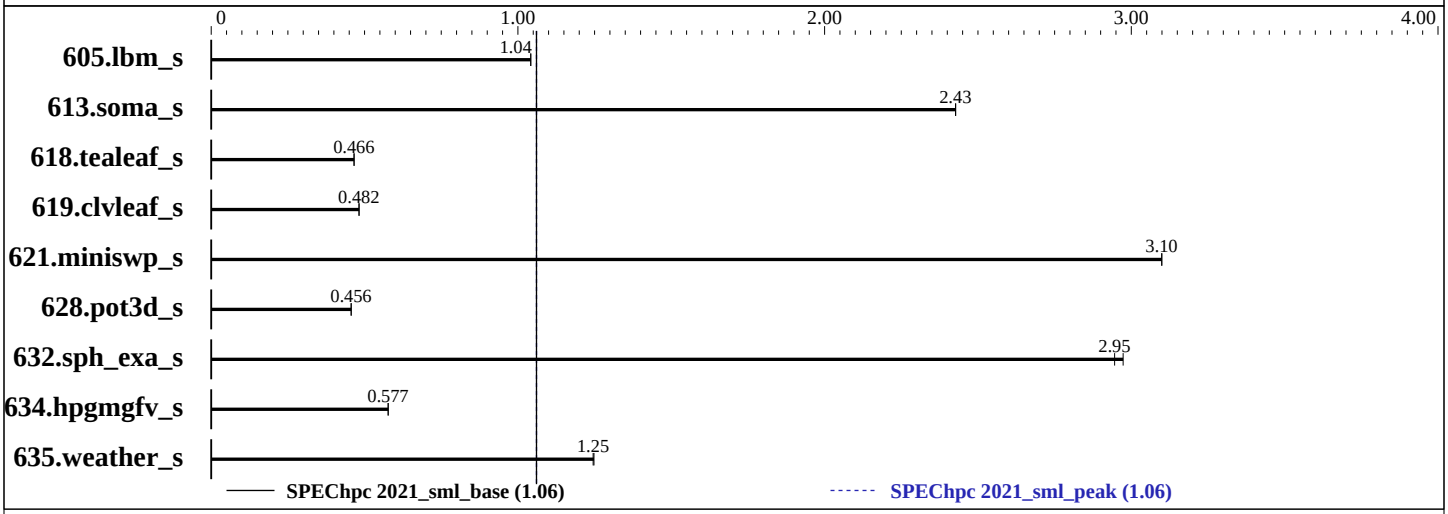
xFusion 2288H V7 (Intel Xeon Platinum 8490H)

SPEChpc 2021_sml_base = 1.06

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	**1488**	**1.04**	1487	1.04			OMP	8	30	**1488**	**1.04**	1487	1.04		
613.soma_s	OMP	8	30	659	2.43	**659**	**2.43**			OMP	8	30	659	2.43	**659**	**2.43**		
618.tealeaf_s	OMP	8	30	**4402**	**0.466**	4400	0.466			OMP	8	30	**4402**	**0.466**	4400	0.466		
619.clvleaf_s	OMP	8	30	**3424**	**0.482**	3422	0.482			OMP	8	30	**3424**	**0.482**	3422	0.482		
621.miniswp_s	OMP	8	30	**355**	**3.10**	355	3.10			OMP	8	30	**355**	**3.10**	355	3.10		
628.pot3d_s	OMP	8	30	**3671**	**0.456**	3670	0.456			OMP	8	30	**3671**	**0.456**	3670	0.456		
632.sph_exa_s	OMP	8	30	774	2.97	**781**	**2.95**			OMP	8	30	774	2.97	**781**	**2.95**		
634.hpgmgfv_s	OMP	8	30	1690	0.577	**1690**	**0.577**			OMP	8	30	1690	0.577	**1690**	**0.577**		
635.weather_s	OMP	8	30	**2088**	**1.25**	2083	1.25			OMP	8	30	**2088**	**1.25**	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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Software Availability: Nov-2022

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

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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: hpc2021-20230110-00159.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
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

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++`

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.

Tested with SPEChpc2021 v1.1.7 on 2023-01-08 02:38:28-0500.
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