SPEChpc™ 2021 Small Result

Copyright 2021-2024 Standard Performance Evaluation Corporation

xFusion

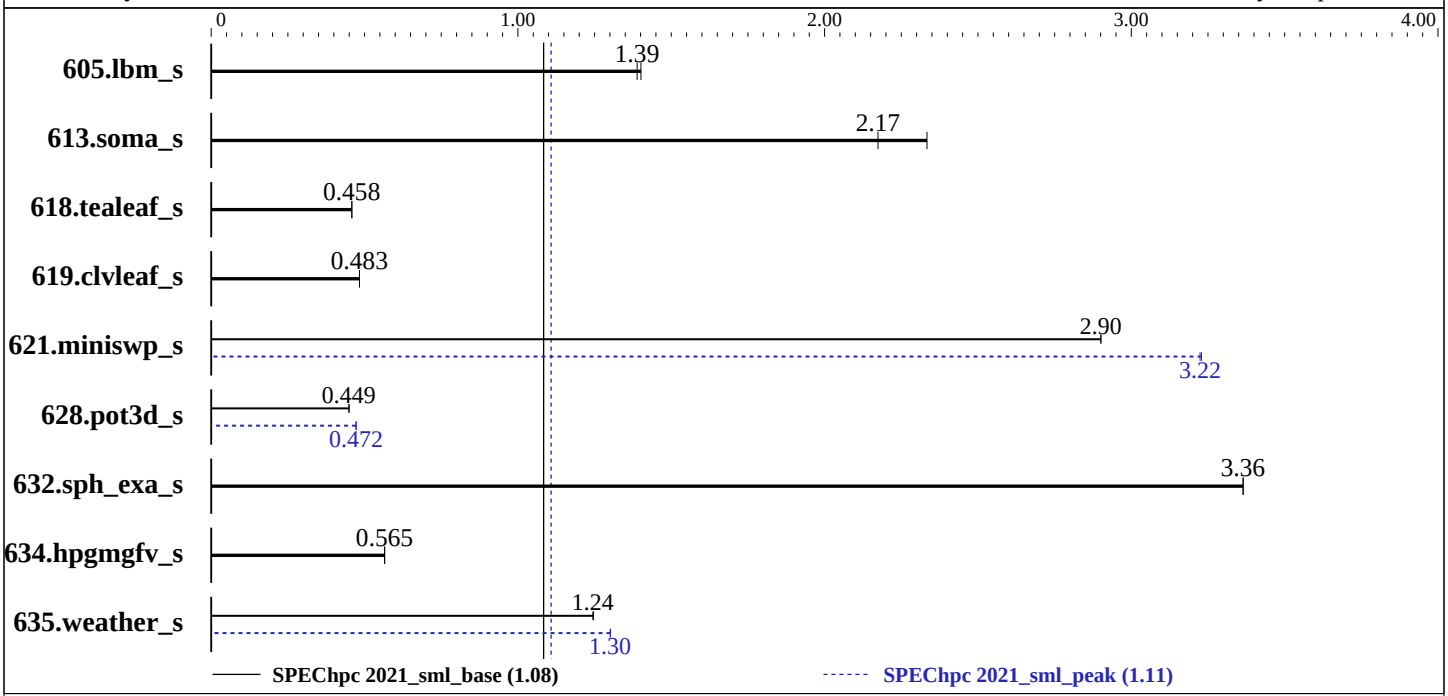
xFusion FusionServer 2288H V7 (Intel Xeon Platinum 8490H)

SPEChpc 2021_sml_base = 1.08

SPEChpc 2021_sml_peak = 1.11

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

Test Date: Dec-2023
Hardware Availability: Jan-2023
Software Availability: Apr-2023



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	20	12	**1116**	**1.39**	1106	1.40			OMP	20	12	**1116**	**1.39**	1106	1.40		
613.soma_s	OMP	20	12	686	2.33	**736**	**2.17**			OMP	20	12	686	2.33	**736**	**2.17**		
618.tealeaf_s	OMP	20	12	4470	0.459	**4472**	**0.458**			OMP	20	12	4470	0.459	**4472**	**0.458**		
619.clvleaf_s	OMP	20	12	**3413**	**0.483**	3413	0.483			OMP	20	12	**3413**	**0.483**	3413	0.483		
621.miniswp_s	OMP	20	12	**379**	**2.90**	379	2.90			OMP	4	60	341	3.23	**341**	**3.22**		
628.pot3d_s	OMP	20	12	3727	0.449	**3729**	**0.449**			OMP	120	2	**3546**	**0.472**	3546	0.472		
632.sph_exa_s	OMP	20	12	**684**	**3.36**	684	3.36			OMP	20	12	**684**	**3.36**	684	3.36		
634.hpgmgfv_s	OMP	20	12	**1724**	**0.565**	1724	0.565			OMP	20	12	**1724**	**0.565**	1724	0.565		
635.weather_s	OMP	20	12	**2089**	**1.24**	2086	1.25			OMP	20	12	1997	1.30	**1998**	**1.30**		

SPEChpc 2021_sml_base = 1.08

SPEChpc 2021_sml_peak = 1.11

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

SPEChpc™ 2021 Small Result

Copyright 2021-2024 Standard Performance Evaluation Corporation

xFusion

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

SPEChpc 2021_sml_base = 1.08

SPEChpc 2021_sml_peak = 1.11

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

Test Date: Dec-2023
Hardware Availability: Jan-2023
Software Availability: Apr-2023

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:	1
Total Chips:	2
Total Cores:	120
Total Threads:	240
Total Memory:	1 TB
Max. Peak Threads:	60

Software Summary

Compiler:	Intel oneAPI Compiler 2023.0.0
MPI Library:	Intel MPI Library 2021.8 for Linux OS
Other MPI Info:	None
Other Software:	None
Base Parallel Model:	OMP
Base Ranks Run:	20
Base Threads Run:	12
Peak Parallel Models:	OMP
Minimum Peak Ranks:	4
Maximum Peak Ranks:	120
Max. Peak Threads:	60
Min. Peak Threads:	2

Node Description: xFusion FusionServer 2288H V7

Hardware

Number of nodes:	1
Uses of the node:	Compute Node
Vendor:	xFusion
Model:	xFusion FusionServer 2288H V7
CPU Name:	Intel Xeon Platinum 8490H
CPU(s) orderable:	1, 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:	0
Accel Model:	None
Accel Vendor:	None
Accel Type:	None
Accel Connection:	None
Accel ECC enabled:	None
Accel Description:	None
Adapter:	MCX653105A-EFAT
Number of Adapters:	1
Slot Type:	PCI-Express 4.0 x16
Data Rate:	100 Gb/s
Ports Used:	1
Interconnect Type:	Mellanox HDR

Software

Accelerator Driver:	None
Adapter:	MCX653105A-EFAT
Adapter Driver:	5.4-3.1.0
Adapter Firmware:	20.32.1010
Operating System:	Rocky Linux release 8.7 (Green Obsidian) 4.18.0-425.3.1.el8.x86_64
Local File System:	xfs
Shared File System:	NFS
System State:	Multi-user, run level 3
Other Software:	N/A

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.
```

Compiler Version Notes

```
==============================================================================
 CXXC 632.sph_exa_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler 2023.2.0 (2023.2.0.20230622)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /share/opt/2023.2.0/compiler/2023.2.0/linux/bin-llvm
Configuration file:
  /share/opt/2023.2.0/compiler/2023.2.0/linux/bin-llvm/../bin/icpx.cfg
------------------------------------------------------------------------------

==============================================================================
 CC  605.lbm_s(base, peak) 613.soma_s(base, peak) 618.tealeaf_s(base, peak)
     621.miniswp_s(base, peak) 634.hpgmgfv_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler 2023.2.0 (2023.2.0.20230622)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /share/opt/2023.2.0/compiler/2023.2.0/linux/bin-llvm
Configuration file:
  /share/opt/2023.2.0/compiler/2023.2.0/linux/bin-llvm/../bin/icx.cfg
------------------------------------------------------------------------------

==============================================================================
 FC  619.clvleaf_s(base, peak) 628.pot3d_s(base, peak) 635.weather_s(base,
     peak)
------------------------------------------------------------------------------
```

(Continued on next page)

Compiler Version Notes (Continued)

```
ifx (IFX) 2023.2.0 20230622
Copyright (C) 1985-2023 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

605.lbm_s: `-lstdc++ -std=c++14`
613.soma_s: `-lstdc++ -std=c++14`
618.tealeaf_s: `-lstdc++ -std=c++14`
621.miniswp_s: `-lstdc++ -std=c++14`
634.hpgmgfv_s: `-lstdc++ -std=c++14`

Base Optimization Flags

C benchmarks:
`-O3 -Ofast -ipo -fiopenmp -xCORE-AVX512 -mprefer-vector-width=512 -qopt-multiple-gather-scatter-by-shuffles -ffast-math -flto -funroll-loops`

C++ benchmarks:
`-O3 -Ofast -ipo -fiopenmp -xCORE-AVX512 -mprefer-vector-width=512 -qopt-multiple-gather-scatter-by-shuffles -ffast-math -flto -funroll-loops`

Fortran benchmarks:
`-O3 -Ofast -ipo -fiopenmp -xCORE-AVX512 -mprefer-vector-width=512 -qopt-multiple-gather-scatter-by-shuffles -ffast-math -flto -funroll-loops -nostandard-realloc-lhs -align array64byte`

Base Other Flags

C benchmarks:
`-Wno-incompatible-function-pointer-types`

Peak Compiler Invocation

C benchmarks:
`mpiicc -cc=icx`

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

Fortran benchmarks:
`mpiifort -fc=ifx`

Peak Portability Flags

605.lbm_s: `-lstdc++ -std=c++14`
613.soma_s: `-lstdc++ -std=c++14`
618.tealeaf_s: `-lstdc++ -std=c++14`
621.miniswp_s: `-lstdc++ -std=c++14`
634.hpgmgfv_s: `-lstdc++ -std=c++14`

Peak Optimization Flags

C benchmarks:

605.lbm_s: `basepeak = yes`

613.soma_s: `basepeak = yes`

618.tealeaf_s: `basepeak = yes`

621.miniswp_s: `-O3 -Ofast -xCORE-AVX512 -ansi-alias -qopenmp -ipo -qopt-zmm-usage=high -qopt-multiple-gather-scatter-by-shuffles`

634.hpgmgfv_s: `basepeak = yes`

C++ benchmarks:

(Continued on next page)

Peak Optimization Flags (Continued)

632.sph_exa_s: `basepeak = yes`

Fortran benchmarks:

619.clvleaf_s: `basepeak = yes`

628.pot3d_s: `-O3 -Ofast -ipo -fiopenmp -xCORE-AVX512 -mprefer-vector-width=512 -qopt-multiple-gather-scatter-by-shuffles -ffast-math -flto -funroll-loops -qopt-streaming-stores=always -nostandard-realloc-lhs -align array64byte`

635.weather_s: `Same as 628.pot3d_s`

Peak Other Flags

C benchmarks:
`-Wno-incompatible-function-pointer-types`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2023-08-16.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2023-08-16.xml`

SPEChpc is a trademark of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEChpc2021 v1.1.8 on 2023-12-22 23:04:16-0500.
Report generated on 2024-01-10 17:35:08 by hpc2021 PS formatter v1.0.3.
Originally published on 2024-01-10.