



SPEChpc™ 2021 Small Result

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xFusion

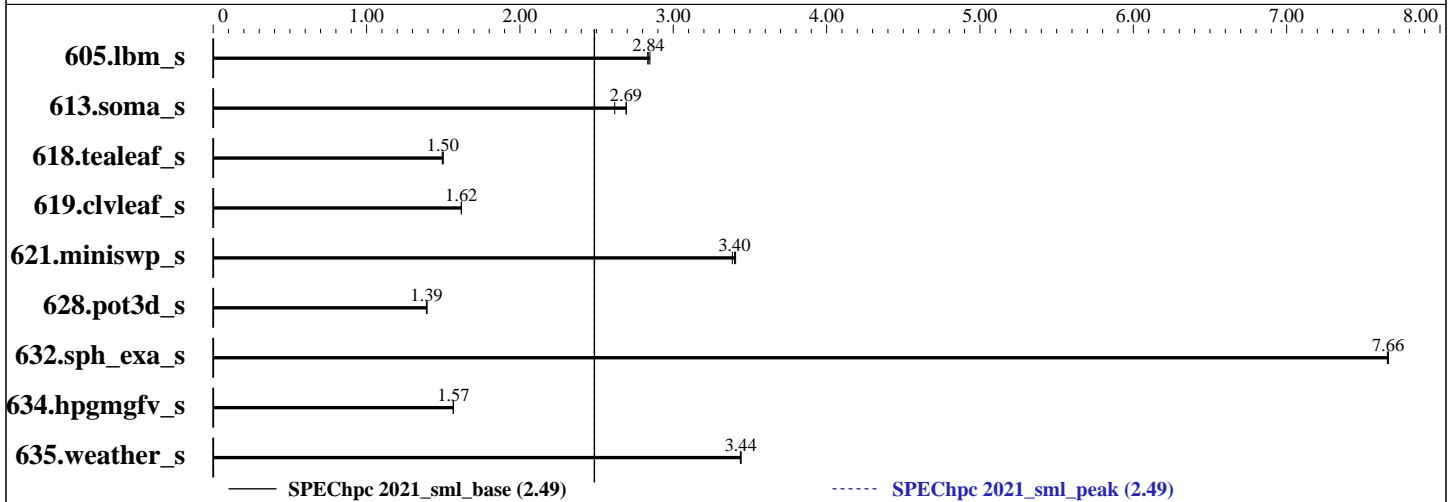
xFusion FusionServer 2288H V7 (Intel Xeon Platinum 8490H)

SPEChpc 2021_sml_base = 2.49

SPEChpc 2021_sml_peak = 2.49

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	MPI	360	1	546	2.84	547	2.83	544	2.85	MPI	360	1	546	2.84	547	2.83	544	2.85
613.soma_s	MPI	360	1	594	2.69	611	2.62	594	2.69	MPI	360	1	594	2.69	611	2.62	594	2.69
618.tealeaf_s	MPI	360	1	1368	1.50	1367	1.50	1373	1.49	MPI	360	1	1368	1.50	1367	1.50	1373	1.49
619.cvlleaf_s	MPI	360	1	1020	1.62	1019	1.62	1020	1.62	MPI	360	1	1020	1.62	1019	1.62	1020	1.62
621.miniswp_s	MPI	360	1	325	3.39	324	3.40	323	3.41	MPI	360	1	325	3.39	324	3.40	323	3.41
628.pot3d_s	MPI	360	1	1201	1.39	1205	1.39	1203	1.39	MPI	360	1	1201	1.39	1205	1.39	1203	1.39
632.sph_exa_s	MPI	360	1	300	7.66	300	7.66	300	7.66	MPI	360	1	300	7.66	300	7.66	300	7.66
634.hpgmgfv_s	MPI	360	1	622	1.57	622	1.57	623	1.56	MPI	360	1	622	1.57	622	1.57	623	1.56
635.weather_s	MPI	360	1	755	3.44	756	3.44	756	3.44	MPI	360	1	755	3.44	756	3.44	756	3.44

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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: 3
Total Chips: 6
Total Cores: 360
Total Threads: 360
Total Memory: 1536 GB
Max. Peak Threads: 1

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: MPI
Base Ranks Run: 360
Base Threads Run: 1
Peak Parallel Models: MPI
Minimum Peak Ranks: 360
Maximum Peak Ranks: 360
Max. Peak Threads: 1
Min. Peak Threads: 1

Node Description: xFusion FusionServer 2288H V7

Hardware

Number of nodes: 3
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: 1
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 2Rx8 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



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Interconnect Description: Mellanox HDR

Hardware

Software

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

: --

Submit Notes

The config file option 'submit' was used.

Compiler Version Notes

```

=====
CXXC 632.sph_exa_s(base)
-----
Intel(R) oneAPI DPC++/C++ Compiler 2023.0.0 (2023.0.0.20221201)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /share/app/intel/2023.0.0/compiler/latest/linux/bin-llvm
Configuration file:
  /share/app/intel/2023.0.0/compiler/latest/linux/bin-llvm/./bin/icpx.cfg
-----

=====
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 2023.0.0 (2023.0.0.20221201)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /share/app/intel/2023.0.0/compiler/latest/linux/bin-llvm
Configuration file:
  /share/app/intel/2023.0.0/compiler/latest/linux/bin-llvm/./bin/icx.cfg
-----

=====
FC 619.clvleaf_s(base) 628.pot3d_s(base) 635.weather_s(base)
-----
ifx (IFORT) 2023.0.0 20221201

```

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Compiler Version Notes (Continued)

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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 -xCORE-AVX512 -mprefer-vector-width=512  
-qopt-multiple-gather-scatter-by-shuffles -ffast-math -flto  
-funroll-loops
```

C++ benchmarks:

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

Fortran benchmarks:

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



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Base Other Flags

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

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
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_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

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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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