



SPEChpc™ 2021 Small Result

Copyright 2021-2024 Standard Performance Evaluation Corporation

xFusion

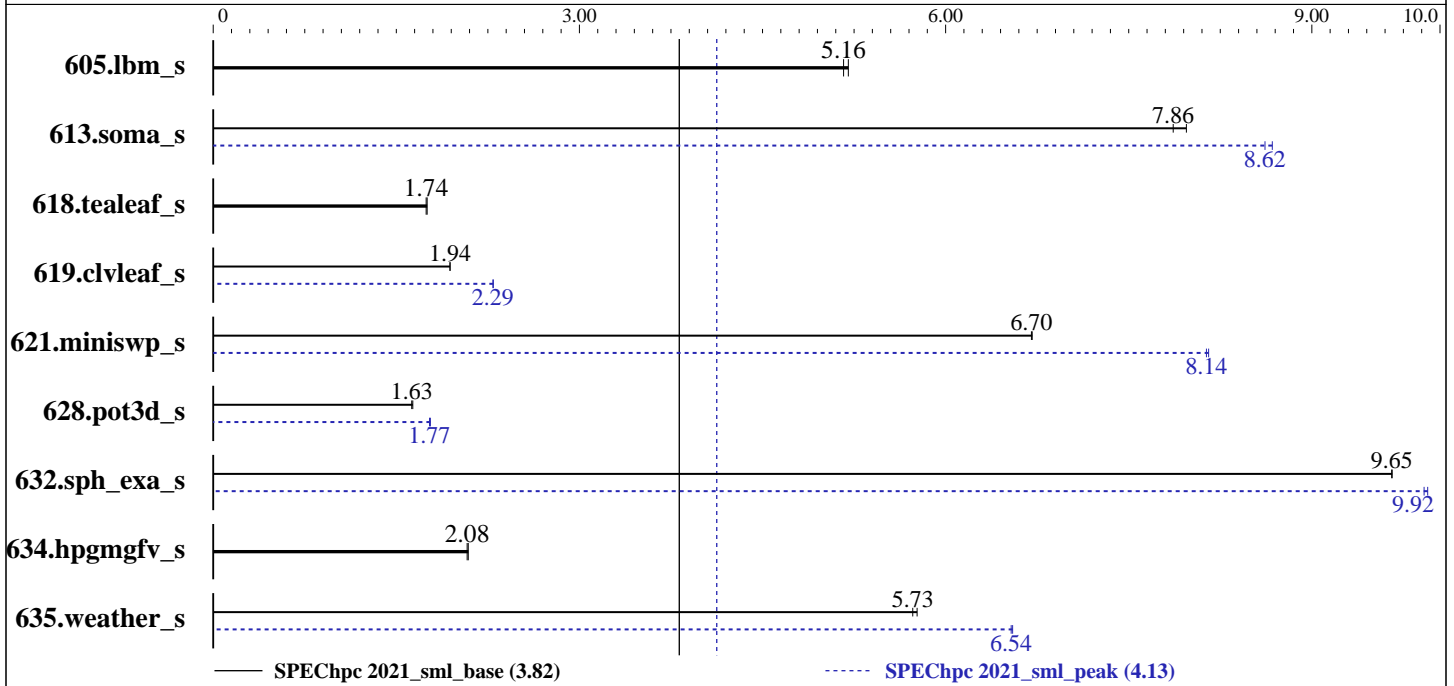
xFusion FusionServer 2288H V7 (Intel Xeon Platinum 8490H)

SPEChpc 2021_sml_base = 3.82

SPEChpc 2021_sml_peak = 4.13

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	32	30	298	5.20	300	5.16			OMP	32	30	298	5.20	300	5.16		
613.soma_s	OMP	32	30	203	7.86	201	7.97			OMP	8	120	186	8.62	184	8.68		
618.tealeaf_s	OMP	32	30	1175	1.74	1170	1.75			OMP	32	30	1175	1.74	1170	1.75		
619.clvleaf_s	OMP	32	30	851	1.94	850	1.94			OMP	480	2	720	2.29	719	2.29		
621.miniswp_s	OMP	32	30	164	6.71	164	6.70			OMP	8	120	135	8.14	135	8.15		
628.pot3d_s	OMP	32	30	1030	1.63	1024	1.64			OMP	480	2	941	1.78	945	1.77		
632.sph_exa_s	OMP	32	30	238	9.66	238	9.65			OMP	480	2	232	9.92	231	9.95		
634.hpgmgfv_s	OMP	32	30	469	2.08	467	2.09			OMP	32	30	469	2.08	467	2.09		
635.weather_s	OMP	32	30	454	5.73	451	5.77			OMP	64	15	398	6.54	397	6.55		

SPEChpc 2021_sml_base = 3.82

SPEChpc 2021_sml_peak = 4.13

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 = 3.82

SPEChpc 2021_sml_peak = 4.13

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: 4
Total Chips: 8
Total Cores: 480
Total Threads: 960
Total Memory: 2 TB
Max. Peak Threads: 120

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: 32
Base Threads Run: 30
Peak Parallel Models: OMP
Minimum Peak Ranks: 8
Maximum Peak Ranks: 480
Max. Peak Threads: 120
Min. Peak Threads: 2

Node Description: xFusion FusionServer 2288H V7

Hardware

Number of nodes: 4
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: 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



SPEChpc™ 2021 Small Result

Copyright 2021-2024 Standard Performance Evaluation Corporation

xFusion

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

SPEChpc 2021_sml_base = 3.82

SPEChpc 2021_sml_peak = 4.13

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

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

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, peak)
-----
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, peak) 613.soma_s(base, peak) 618.tealeaf_s(base, peak)
   621.miniswp_s(base) 634.hpgmgfv_s(base, peak)
-----
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
-----

=====
CC 621.miniswp_s(peak)
-----
icc: remark #10441: The Intel(R) C++ Compiler Classic (ICC) is deprecated and

```

(Continued on next page)



SPEChpc™ 2021 Small Result

Copyright 2021-2024 Standard Performance Evaluation Corporation

xFusion

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

SPEChpc 2021_sml_base = 3.82

SPEChpc 2021_sml_peak = 4.13

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

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

Compiler Version Notes (Continued)

will be removed from product release in the second half of 2023. The Intel(R) oneAPI DPC++/C++ Compiler (ICX) is the recommended compiler moving forward. Please transition to use this compiler. Use '-diag-disable=10441' to disable this message.

icc: command line warning #10148: option '-Wno-incompatible-function-pointer-types' not supported

icc (ICC) 2021.8.0 20221119

Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

=====
FC 619.clvleaf_s(peak)

ifort (IFORT) 2021.8.0 20221119

Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

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

ifx (IFORT) 2023.0.0 20221201

Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:

mpiicc -cc=icx

C++ benchmarks:

mpicpc -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



SPEChpc™ 2021 Small Result

Copyright 2021-2024 Standard Performance Evaluation Corporation

xFusion

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

SPEChpc 2021_sml_base = 3.82

SPEChpc 2021_sml_peak = 4.13

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

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

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 (except as noted below):

```
mpiicc -cc=icx
```

```
621.miniswp_s: mpiicc
```

C++ benchmarks:

```
mpiicpc -cxx=icpx
```

Fortran benchmarks (except as noted below):

```
mpiifort -fc=ifx
```

```
619.clvleaf_s: mpiifort
```

Peak Portability Flags

```
605.lbm_s: -lstdc++ -std=c++14
```

```
613.soma_s: -lstdc++ -std=c++14
```

(Continued on next page)



SPEChpc™ 2021 Small Result

Copyright 2021-2024 Standard Performance Evaluation Corporation

xFusion

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

SPEChpc 2021_sml_base = 3.82

SPEChpc 2021_sml_peak = 4.13

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

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

Peak Portability Flags (Continued)

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

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:

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

Fortran benchmarks:

619.clvleaf_s: -O3 -Ofast -xCORE-AVX512 -ansi-alias -qopenmp -ipo
-qopt-zmm-usage=high
-qopt-multiple-gather-scatter-by-shuffles
-nostandard-realloc-lhs -align array64byte

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



SPEChpc™ 2021 Small Result

Copyright 2021-2024 Standard Performance Evaluation Corporation

xFusion

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

SPEChpc 2021_sml_base = 3.82

SPEChpc 2021_sml_peak = 4.13

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

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

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 2023-12-24 22:34:50-0500.
Report generated on 2024-01-10 17:34:49 by hpc2021 PDF formatter v1.0.3.
Originally published on 2024-01-10.