SPEChpc™ 2021 Small Result

Copyright 2021-2022 Standard Performance Evaluation Corporation

xFusion

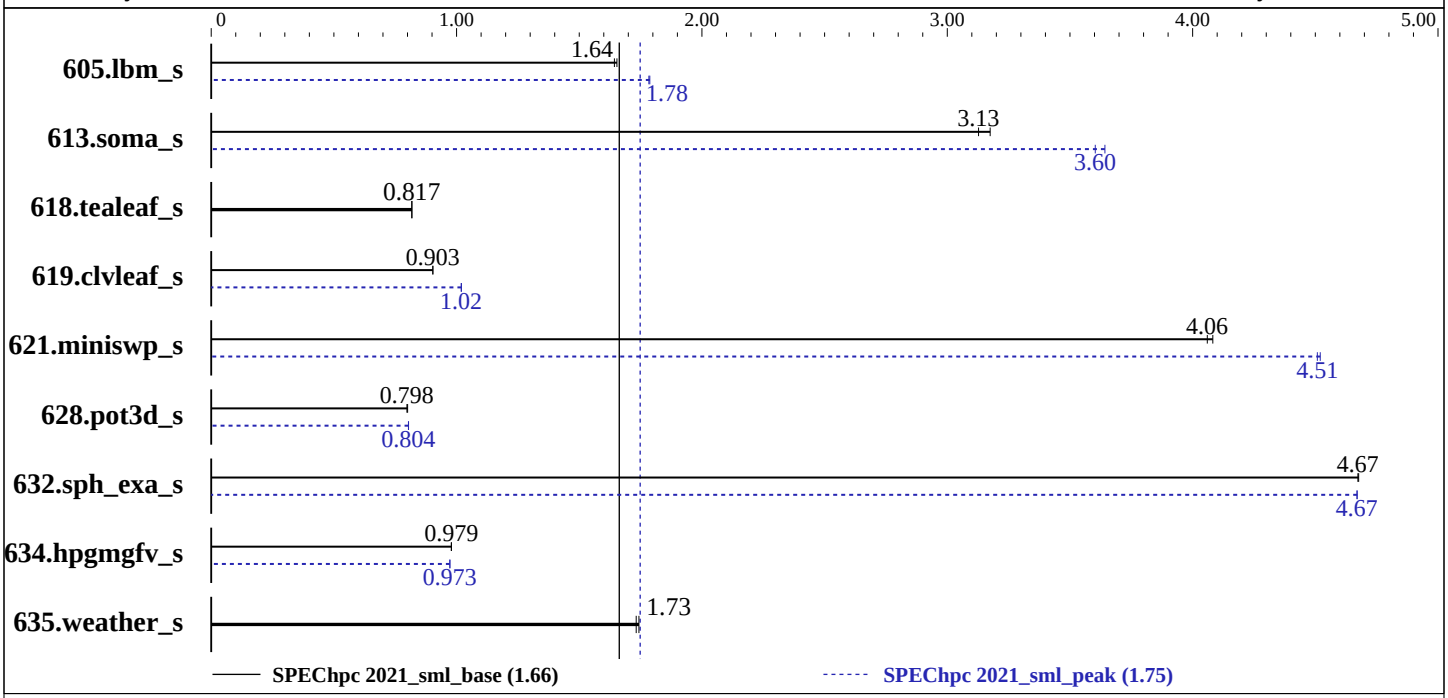
FusionServer 2288H V6 (Intel Xeon Platinum 8380)

SPEChpc 2021_sml_base = 1.66

SPEChpc 2021_sml_peak = 1.75

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

Test Date: Jul-2022
Hardware Availability: Apr-2021
Software Availability: Oct-2021



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	48	10	**943**	**1.64**	937	1.65			OMP	24	20	867	1.79	**869**	**1.78**		
613.soma_s	OMP	48	10	504	3.17	**512**	**3.13**			OMP	6	80	**444**	**3.60**	439	3.64		
618.tealeaf_s	OMP	48	10	2505	0.818	**2508**	**0.817**			OMP	48	10	2505	0.818	**2508**	**0.817**		
619.clvleaf_s	OMP	48	10	1826	0.903	**1827**	**0.903**			OMP	24	20	1618	1.02	**1619**	**1.02**		
621.miniswp_s	OMP	48	10	269	4.08	**271**	**4.06**			OMP	24	20	243	4.52	**244**	**4.51**		
628.pot3d_s	OMP	48	10	2092	0.801	**2100**	**0.798**			OMP	6	80	**2084**	**0.804**	2083	0.804		
632.sph_exa_s	OMP	48	10	**492**	**4.67**	492	4.68			OMP	48	10	**493**	**4.67**	492	4.67		
634.hpgmgfv_s	OMP	48	10	996	0.979	**996**	**0.979**			OMP	48	10	**1002**	**0.973**	1002	0.973		
635.weather_s	OMP	48	10	1491	1.74	**1501**	**1.73**			OMP	48	10	1491	1.74	**1501**	**1.73**		

SPEChpc 2021_sml_base = 1.66

SPEChpc 2021_sml_peak = 1.75

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

SPEChpc™ 2021 Small Result

Copyright 2021-2022 Standard Performance Evaluation Corporation

xFusion

FusionServer 2288H V6 (Intel Xeon Platinum 8380)

SPEChpc 2021_sml_base = 1.66

SPEChpc 2021_sml_peak = 1.75

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

Test Date: Jul-2022
Hardware Availability: Apr-2021
Software Availability: Oct-2021

Hardware Summary

Type of System:	Homogeneous Cluster
Compute Node:	Fusionserver 2288H V6
Interconnect:	Mellanox HDR
Compute Nodes Used:	3
Total Chips:	6
Total Cores:	240
Total Threads:	480
Total Memory:	768 GB
Max. Peak Threads:	80

Software Summary

Compiler:	Intel oneAPI Compiler 2021.4.0
MPI Library:	Intel MPI Library for Linux* OS, Version 2021.4.0 Build 20210831
Other MPI Info:	--
Other Software:	--
Base Parallel Model:	OMP
Base Ranks Run:	48
Base Threads Run:	10
Peak Parallel Models:	OMP
Minimum Peak Ranks:	6
Maximum Peak Ranks:	48
Max. Peak Threads:	80
Min. Peak Threads:	10

Node Description: Fusionserver 2288H V6

Hardware

Number of nodes:	3
Uses of the node:	Compute
Vendor:	xFusion
Model:	FusionServer 2288H V6
CPU Name:	Intel Xeon Platinum 8380
CPU(s) orderable:	1, 2 chips
Chips enabled:	2
Cores enabled:	80
Cores per chip:	40
Threads per core:	2
CPU Characteristics:	Turbo Boost Technology up to 3.4 GHz
CPU MHz:	2300
Primary Cache:	32 KB I + 48 KB D on chip per core
Secondary Cache:	1.25 MB I+D on chip per core
L3 Cache:	60 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (16 x 16 GB 2Rx8 PC4-3200R)
Disk Subsystem:	2 x 480 GB SATA 2.5" SSD (RAID 1)
Other Hardware:	None
Accel Count:	None
Accel Model:	--
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

(Continued on next page)

Software

Accelerator Driver:	--
Adapter:	MCX653105A-EFAT
Adapter Driver:	5.4-3.1.0
Adapter Firmware:	20.32.1010
Operating System:	CentOS Linux release 8.2.2004 4.18.0-193.el8.x86_644
Local File System:	xfs
Shared File System:	NFS
System State:	Multi-user, run level 3
Other Software:	None

Node Description: Fusionserver 2288H V6

Hardware (Continued)

Interconnect Type: Mellanox HDR

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:	--
Topology:	Mesh
Primary Use:	MPI Traffic

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 -hostfile $[top]/3node --bind-to core -np $ranks -ppn $ppn -genv OMP_NUM_THREADS=$threads $command
```

Compiler Version Notes

```
==============================================================================
 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 2021.4.0 (2021.4.0.20210924)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /home/opt/compiler/oneapi/2021.4.0/compiler/2021.4.0/linux/bin
------------------------------------------------------------------------------

==============================================================================
 CXXC 632.sph_exa_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler 2021.4.0 (2021.4.0.20210924)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /home/opt/compiler/oneapi/2021.4.0/compiler/2021.4.0/linux/bin
```

(Continued on next page)

Compiler Version Notes (Continued)

```
------------------------------------------------------------------------------

==============================================================================
 FC  619.clvleaf_s(base, peak) 628.pot3d_s(base, peak) 635.weather_s(base,
      peak)
------------------------------------------------------------------------------
ifx (IFORT) 2021.4.0 Beta 20210924
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`mpiicc -cc=icx -lstdc++`(*)

C++ benchmarks:
`mpiicpc -cxx=icx -lstdc++`(*)

Fortran benchmarks:
`mpiifort -fc=ifx -lstdc++`(*)

(*) Indicates a compiler flag that was found in a non-compiler variable.

Base Portability Flags

613.soma_s: `-DSPEC_NO_VAR_ARRAY_REDUCE`

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`

Peak Compiler Invocation

C benchmarks:
`mpiicc -cc=icx -lstdc++(*)`

C++ benchmarks:
`mpiicpc -cxx=icx -lstdc++(*)`

Fortran benchmarks:
`mpiifort -fc=ifx -lstdc++(*)`

(*) Indicates a compiler flag that was found in a non-compiler variable.

Peak Portability Flags

613.soma_s: `-DSPEC_NO_VAR_ARRAY_REDUCE`

Peak Optimization Flags

C benchmarks:

605.lbm_s: `-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp -ansi-alias`

613.soma_s: `Same as 605.lbm_s`

618.tealeaf_s: `basepeak = yes`

621.miniswp_s: `Same as 605.lbm_s`

634.hpgmgfv_s: `-Ofast -ipo -fiopenmp -ansi-alias`

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

Fortran benchmarks:

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

628.pot3d_s: `-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp -nostandard-realloc-lhs -align array64byte`

(Continued on next page)

Peak Optimization Flags (Continued)

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.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.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 v1.0.3 on 2022-07-18 18:15:17-0400.
Report generated on 2022-08-24 18:41:06 by hpc2021 PS formatter v1.0.3.
Originally published on 2022-08-24.