SPEChpc™ 2021 Tiny Result

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xFusion

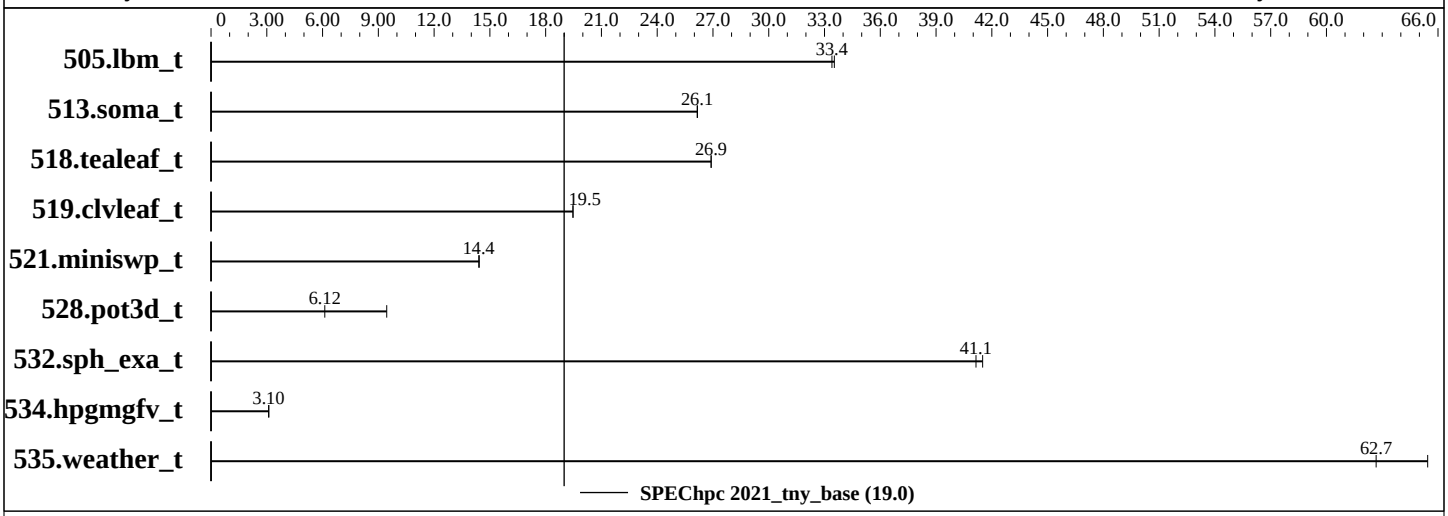
xFusion FusionServer 2288H V7 (Intel Xeon Platinum 8490H)

SPEChpc 2021_tny_base = 19.0

SPEChpc 2021_tny_peak = Not Run

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

Test Date: Apr-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
505.lbm_t	MPI	480	1	**67.4**	**33.4**	67.1	33.5											
513.soma_t	MPI	480	1	141	26.2	**141**	**26.1**											
518.tealeaf_t	MPI	480	1	61.3	26.9	**61.3**	**26.9**											
519.clvleaf_t	MPI	480	1	84.7	19.5	**84.8**	**19.5**											
521.miniswp_t	MPI	480	1	**111**	**14.4**	111	14.4											
528.pot3d_t	MPI	480	1	**347**	**6.12**	225	9.45											
532.sph_exa_t	MPI	480	1	47.0	41.5	**47.4**	**41.1**											
534.hpgmgfv_t	MPI	480	1	377	3.11	**380**	**3.10**											
535.weather_t	MPI	480	1	49.3	65.4	**51.5**	**62.7**											

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

Software Summary

Compiler:	C/C++/Fortran: Version 2022.2.1 of Intel oneAPI Compiler
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:	MPI
Base Ranks Run:	480
Base Threads Run:	1
Peak Parallel Models:	Not Run
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--
Max. Peak Threads:	--
Min. Peak Threads:	--

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:	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 2Rx4 PC5-4800B-R)
Disk Subsystem:	1 x 7.68 TB NVMe SSD
Other Hardware:	None
Accel Count:	N/A
Accel Model:	N/A
Accel Vendor:	N/A
Accel Type:	N/A
Accel Connection:	N/A
Accel ECC enabled:	N/A
Accel Description:	N/A
Adapter:	MCX653105A-EFAT
Number of Adapters:	1
Slot Type:	PCI-Express 4.0 x16
Data Rate:	100 Gb/s

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Software

Accelerator Driver:	N/A
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:	N/A

Node Description: xFusion FusionServer 2288H V7

Hardware (Continued)

Ports Used: 1
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:	27.2010.1202
Topology:	Mesh
Primary Use:	MPI

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 -hostfile $[top]/$hostfile -np $ranks -ppn $ppn -genv OMP_NUM_THREADS=$threads $command
```

Compiler Version Notes

```
==============================================================================
 CC  505.lbm_t(base) 513.soma_t(base) 518.tealeaf_t(base) 521.miniswp_t(base)
     534.hpgmgfv_t(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler 2022.1.0 (2022.1.0.20220316)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /nfsshare/opt/intel/2022.2.0/compiler/latest/linux/bin-llvm
------------------------------------------------------------------------------

==============================================================================
 CXXC 532.sph_exa_t(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler 2022.1.0 (2022.1.0.20220316)
Target: x86_64-unknown-linux-gnu
Thread model: posix
```

(Continued on next page)

Compiler Version Notes (Continued)

```
InstalledDir: /nfsshare/opt/intel/2022.2.0/compiler/latest/linux/bin-llvm
------------------------------------------------------------------------------

==============================================================================
 FC  519.clvleaf_t(base) 535.weather_t(base)
------------------------------------------------------------------------------
ifx (IFORT) 2022.1.0 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
 FC  528.pot3d_t(base)
------------------------------------------------------------------------------
ifx: command line warning #10157: ignoring option '-W'; argument is of wrong
  type
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=icpx`

Fortran benchmarks:
`mpiifort -fc=ifx`

Base Portability Flags

505.lbm_t: `-lstdc++`
513.soma_t: `-lstdc++ -DSPEC_NO_VAR_ARRAY_REDUCE`
518.tealeaf_t: `-lstdc++`
519.clvleaf_t: `-lstdc++`
521.miniswp_t: `-lstdc++`
528.pot3d_t: `-lstdc++`
532.sph_exa_t: `-lstdc++`
534.hpgmgfv_t: `-lstdc++`
535.weather_t: `-lstdc++`

Base Optimization Flags

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

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

Fortran benchmarks:
`-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512`
`-nostandard-realloc-lhs -align array64byte`

Base Other Flags

C benchmarks (except as noted below):
`-Ispecmpitime`

521.miniswp_t: `-Ispecmpitime/`

534.hpgmgfv_t: `-Ispecmpitime`

C++ benchmarks:
`-Ispecmpitime`

Fortran benchmarks:

519.clvleaf_t: `-Ispecmpitime`

528.pot3d_t: `-Wno-incompatible-function-pointer-types`

535.weather_t: `No flags used`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2023-02-09.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2023-02-09.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 2023-04-12 06:21:45-0400.
Report generated on 2023-05-11 20:27:51 by hpc2021 PS formatter v1.0.3.
Originally published on 2023-05-10.