



SPEChpc™ 2021 Tiny Result

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xFusion

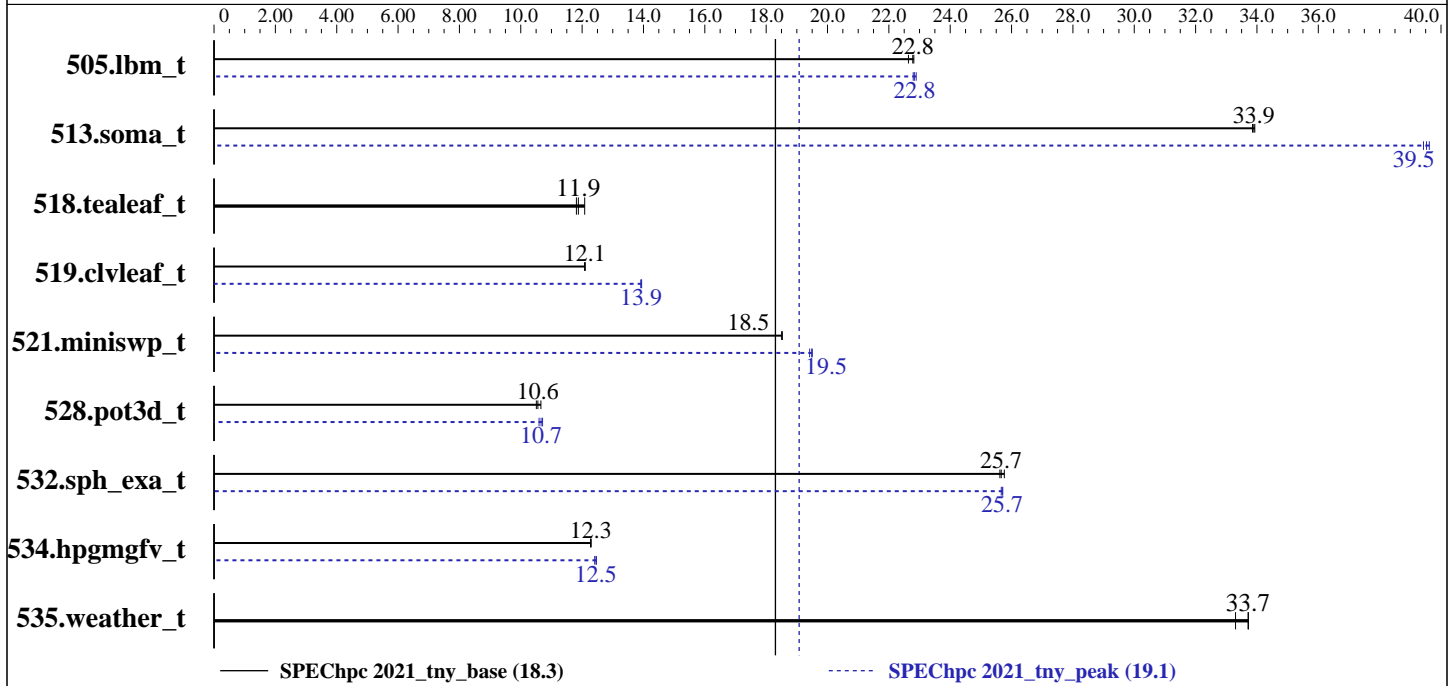
SPEChpc 2021_tny_base = 18.3

FusionServer 2288H V6 (Intel Xeon Platinum 8380)

SPEChpc 2021_tny_peak = 19.1

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
505.lbm_t	OMP	64	10	98.6	22.8	99.4	22.6	98.8	22.8	OMP	32	20	98.5	22.8	98.3	22.9	98.7	22.8
513.soma_t	OMP	64	10	109	33.9	109	33.9	109	33.9	OMP	8	80	93.6	39.5	93.8	39.4	93.4	39.6
518.tealeaf_t	OMP	64	10	137	12.1	140	11.8	139	11.9	OMP	64	10	137	12.1	140	11.8	139	11.9
519.cvlleaf_t	OMP	64	10	136	12.1	136	12.1	137	12.1	OMP	32	20	119	13.9	118	13.9	119	13.9
521.miniswp_t	OMP	64	10	86.4	18.5	86.4	18.5	86.4	18.5	OMP	32	20	82.4	19.4	82.1	19.5	82.0	19.5
528.pot3d_t	OMP	64	10	201	10.6	199	10.7	202	10.5	OMP	8	80	198	10.7	199	10.7	201	10.6
532.sph_exa_t	OMP	64	10	76.1	25.6	75.7	25.8	76.0	25.7	OMP	64	10	75.8	25.7	76.0	25.7	75.9	25.7
534.hpgmgfv_t	OMP	64	10	95.6	12.3	95.7	12.3	95.7	12.3	OMP	64	10	94.7	12.4	94.4	12.5	94.3	12.5
535.weather_t	OMP	64	10	95.6	33.7	96.8	33.3	95.7	33.7	OMP	64	10	95.6	33.7	96.8	33.3	95.7	33.7

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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: Homogeneous Cluster
Compute Node: FusionServer 2288H V6
Interconnect: Mellanox HDR
Compute Nodes Used: 4
Total Chips: 8
Total Cores: 320
Total Threads: 640
Total Memory: 1 TB
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: 64
Base Threads Run: 10
Peak Parallel Models: OMP
Minimum Peak Ranks: 8
Maximum Peak Ranks: 64
Max. Peak Threads: 80
Min. Peak Threads: 10

Node Description: FusionServer 2288H V6

Hardware

Number of nodes: 4
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

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

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Node Description: FusionServer 2288H V6

Hardware (Continued)

Interconnect Type: Mellanox HDR

Interconnect Description: Mellanox HDR

Hardware

Vendor: Mellanox
Model: Mellanox HDR
Switch Model: Mellanox QM8790-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
mpirun.hydra -bootstrap ssh -hostfile \${top}/4node --bind-to core -np \$ranks -ppn \$ppn -genv OMP_NUM_THREADS=\$threads \$command

Compiler Version Notes

=====
CC 505.lbm_t(base, peak) 513.soma_t(base, peak) 518.tealeaf_t(base, peak)
521.miniswp_t(base, peak) 534.hpgmgfv_t(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 532.sph_exa_t(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

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Compiler Version Notes (Continued)

=====

```
FC 519.clvleaf_t(base, peak) 528.pot3d_t(base, peak) 535.weather_t(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

```
513.soma_t: -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
```



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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

```
513.soma_t: -DSPEC_NO_VAR_ARRAY_REDUCE
```

Peak Optimization Flags

C benchmarks:

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

```
513.soma_t: Same as 505.lbm_t
```

```
518.tealeaf_t: basepeak = yes
```

```
521.miniswp_t: Same as 505.lbm_t
```

```
534.hpgmgfv_t: -Ofast -ipo -fiopenmp -ansi-alias
```

C++ benchmarks:

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

Fortran benchmarks:

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

```
528.pot3d_t: -Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512  
-fiopenmp -nostandard-realloc-lhs -align array64byte
```

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Peak Optimization Flags (Continued)

535.weather_t: 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>

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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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