



SPEChpc™ 2021 Tiny Result

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Supermicro

(Test Sponsor: Intel)

SPEChpc 2021_tny_base = 18.1

SPEChpc 2021_tny_peak = 19.5

Supermicro SYS-222HA-TN (Intel Xeon 6972P)

hpc2021 License: 13

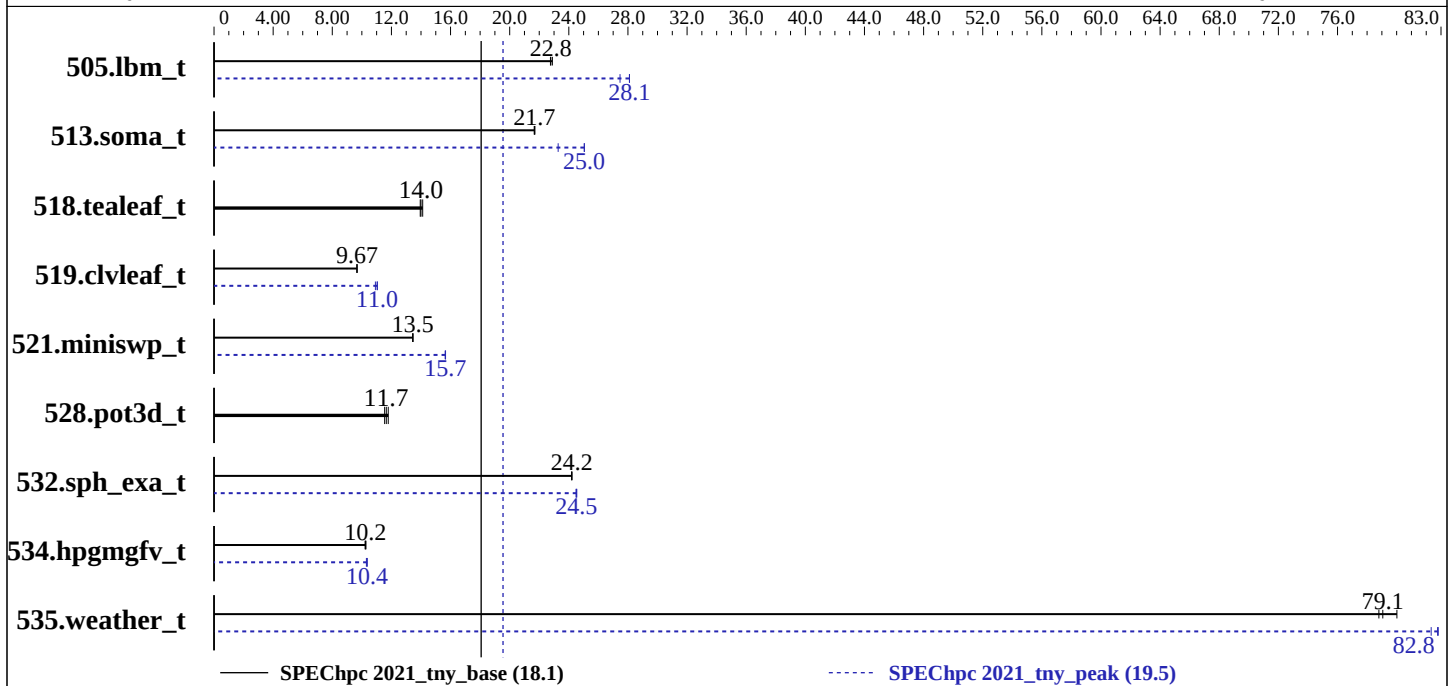
Test Sponsor: Intel

Tested by: Intel

Test Date: Jul-2025

Hardware Availability: Sep-2024

Software Availability: Jun-2025



Results Table

Benchmark	Base								Peak							
	Model	Ranks	Thrds/Rnk	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Model	Ranks	Thrds/Rnk	Seconds	Ratio	Seconds	Ratio
505.lbm_t	OMP	32	6	98.3	22.9	98.9	22.8	98.8	22.8	OMP	24	8	80.1	28.1	80.1	28.1
513.soma_t	OMP	32	6	171	21.7	171	21.7	170	21.7	OMP	6	32	148	25.1	148	25.0
518.tealeaf_t	OMP	32	6	117	14.1	118	13.9	118	14.0	OMP	32	6	117	14.1	118	13.9
519.clvleaf_t	OMP	32	6	171	9.67	171	9.67	171	9.67	OMP	24	8	149	11.0	151	10.9
521.miniswp_t	OMP	32	6	119	13.5	119	13.4	119	13.5	OMP	16	12	102	15.7	102	15.6
528.pot3d_t	OMP	32	6	184	11.5	180	11.8	182	11.7	OMP	32	6	184	11.5	180	11.8
532.sph_exa_t	OMP	32	6	80.5	24.2	80.6	24.2	80.6	24.2	OMP	24	8	79.5	24.5	79.5	24.5
534.hpgmgfv_t	OMP	32	6	115	10.2	114	10.3	115	10.2	OMP	64	3	113	10.4	113	10.4
535.weather_t	OMP	32	6	40.8	79.1	40.9	78.8	40.3	80.0	OMP	64	3	39.2	82.3	38.9	82.8

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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: Supermicro SYS-222HA-TN (Intel Xeon 6972P)
Interconnect: None
Compute Nodes Used: 1
Total Chips: 2
Total Cores: 192
Total Threads: 384
Total Memory: 1536 GB
Total Accelerators: 0
Max. Peak Threads: 32

Software Summary

Compiler: Intel oneAPI Compiler 2025.2
MPI Library: Intel MPI Library 2021.16 for Linux OS
Other MPI Info: None
Other Software: None
Base Parallel Model: OMP
Base Ranks Run: 32
Base Threads Run: 6
Peak Parallel Models: OMP
Minimum Peak Ranks: 6
Maximum Peak Ranks: 64
Max. Peak Threads: 32
Min. Peak Threads: 3

Node Description: Supermicro SYS-222HA-TN (Intel Xeon 6972P)

Hardware

Number of nodes: 1
Uses of the node: Compute
Vendor: Intel
Model: Supermicro SYS-222HA-TN (Intel Xeon 6972P)
CPU Name: Intel Xeon 6972P
CPU(s) orderable: 1, 2 chips
Chips enabled: 2
Cores enabled: 192
Cores per chip: 96
Threads per core: 2
CPU Characteristics: Turbo Boost Technology up to 3.9 GHz
CPU MHz: 2400
Primary Cache: 64 KB I + 48 KB D on chip per core
Secondary Cache: 2 MB I+D on chip per core
L3 Cache: 480 MB I+D on chip per chip
Other Cache: None
Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-6400B)
Disk Subsystem: 1 x 3.5 TB NVMe SSD
Other Hardware: None
Accel Count: None
Accel Model: None
Accel Vendor: None
Accel Type: None
Accel Connection: None
Accel ECC enabled: None
Accel Description: None
Adapter: None
Number of Adapters: 0
Slot Type: PCI-Express 5.0 x16
Data Rate: None
Ports Used: 0
Interconnect Type: None

Software

Accelerator Driver: None
Adapter: None
Adapter Driver: None
Adapter Firmware: None
Operating System: Ubuntu 22.04.5 LTS
6.5.0-21-generic
Local File System: ext4
Shared File System: None
System State: Run level 5
Other Software: None



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Interconnect Description: None

Hardware

Vendor: None
Model: None
Switch Model: None
Number of Switches: 0
Number of Ports: 0
Data Rate: None
Firmware: None
Topology: None
Primary Use: MPI Traffic

Software

: --

Submit Notes

The config file option 'submit' was used.

Compiler Version Notes

=====
CXXC 532.sph_exa_t(base, peak)

Intel(R) oneAPI DPC++/C++ Compiler 2025.2.0 (2025.2.0.20250605)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/intel/oneapi/compiler/2025.2/bin/compiler
Configuration file: /opt/intel/oneapi/compiler/2025.2/bin/compiler/./icpx.cfg

=====
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 2025.2.0 (2025.2.0.20250605)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/intel/oneapi/compiler/2025.2/bin/compiler
Configuration file: /opt/intel/oneapi/compiler/2025.2/bin/compiler/./icx.cfg

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

ifx (IFX) 2025.2.0 20250605
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Compiler Version Notes (Continued)

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++ -std=c++14
513.soma_t: -lstdc++ -std=c++14
518.tealeaf_t: -lstdc++ -std=c++14
521.miniswp_t: -lstdc++ -std=c++14
534.hpgmgfv_t: -lstdc++ -std=c++14

Base Optimization Flags

C benchmarks:

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

C++ benchmarks:

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

Fortran benchmarks:

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



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Base Other Flags

C benchmarks (except as noted below):

-Ispecmpitime -Wno-incompatible-function-pointer-types

521.miniswp_t: -Ispecmpitime/ -Wno-incompatible-function-pointer-types

534.hpgmgfv_t: -Ispecmpitime -Wno-incompatible-function-pointer-types

C++ benchmarks:

-Ispecmpitime

Fortran benchmarks:

519.clvleaf_t: -Ispecmpitime

Peak Compiler Invocation

C benchmarks:

mpiicc -cc=icx

C++ benchmarks:

mpiicpc -cxx=icpx

Fortran benchmarks:

mpiifort -fc=ifx

Peak Portability Flags

505.lbm_t: -lstdc++ -std=c++14

513.soma_t: -lstdc++ -std=c++14

518.tealeaf_t: -lstdc++ -std=c++14

521.miniswp_t: -lstdc++ -std=c++14

534.hpgmgfv_t: -lstdc++ -std=c++14

Peak Optimization Flags

C benchmarks:

505.lbm_t: -O3 -Ofast -xCORE-AVX512 -mprefer-vector-width=512

-qopt-multiple-gather-scatter-by-shuffles -fiopenmp

-ffast-math -flto -funroll-loops

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Peak Optimization Flags (Continued)

513.soma_t: Same as 505.lbm_t

518.tealeaf_t: basepeak = yes

521.miniswp_t: Same as 505.lbm_t

534.hpgmgfv_t: Same as 505.lbm_t

C++ benchmarks:

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

Fortran benchmarks:

519.clvleaf_t: -O3 -Ofast -xCORE-AVX512 -mprefer-vector-width=512
-qopt-multiple-gather-scatter-by-shuffles -fiopenmp
-ffast-math -flto -funroll-loops
-qopt-streaming-stores=always -nostandard-realloc-lhs
-align array64byte

528.pot3d_t: basepeak = yes

535.weather_t: -O3 -Ofast -xCORE-AVX512 -mprefer-vector-width=512
-qopt-multiple-gather-scatter-by-shuffles -fiopenmp
-ffast-math -flto -funroll-loops -nostandard-realloc-lhs
-align array64byte

Peak Other Flags

C benchmarks (except as noted below):

-Ispecmpitime -Wno-incompatible-function-pointer-types

521.miniswp_t: -Ispecmpitime/ -Wno-incompatible-function-pointer-types

534.hpgmgfv_t: -Ispecmpitime -Wno-incompatible-function-pointer-types

C++ benchmarks:

-Ispecmpitime

Fortran benchmarks:

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Peak Other Flags (Continued)

519.clvleaf_t: -Ispecmpitime

The flags file that was used to format this result can be browsed at

http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2024-12-11.html

You can also download the XML flags source by saving the following link:

http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2024-12-11.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 v1.1.9 on 2025-07-31 08:00:02-0400.

Report generated on 2025-08-22 10:43:49 by hpc2021 PDF formatter v112.

Originally published on 2025-08-20.