



# SPEChpc™ 2021 Tiny Result

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## Supermicro

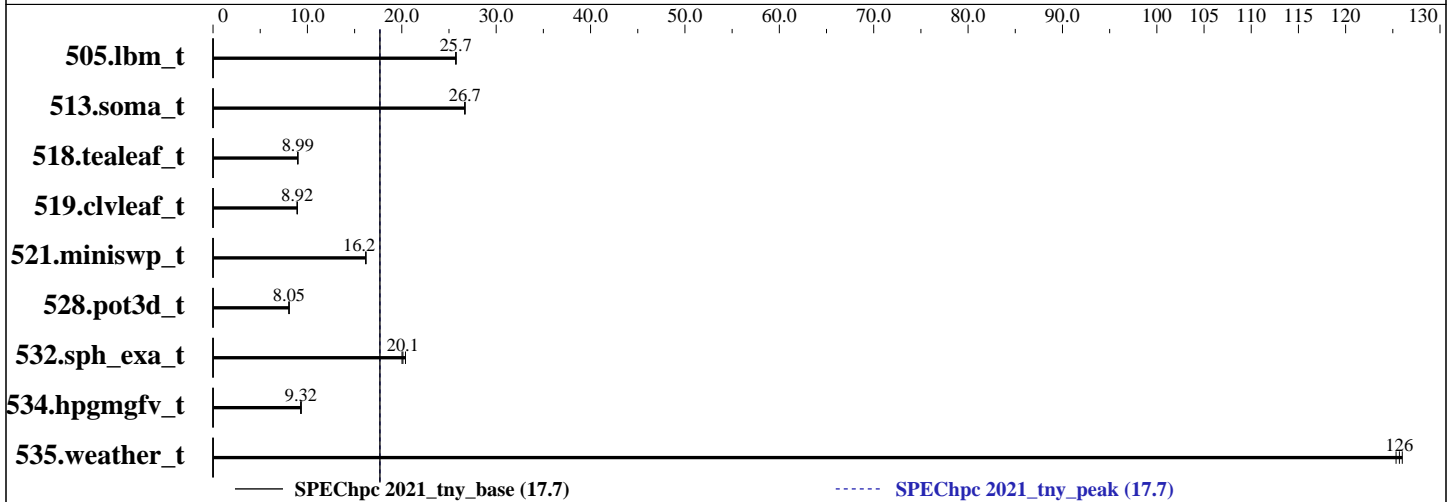
SPEChpc 2021\_tny\_base = 17.7

Hyper A+ Server AS -2126HS-TN (AMD EPYC 9555)

SPEChpc 2021\_tny\_peak = 17.7

hpc2021 License: 6569  
Test Sponsor: Supermicro  
Tested by: Supermicro

Test Date: Sep-2024  
Hardware Availability: Oct-2024  
Software Availability: Apr-2024



## 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	16	16	<b>87.5</b>	<b>25.7</b>	87.3	25.8	87.5	25.7	OMP	16	16	<b>87.5</b>	<b>25.7</b>	87.3	25.8	87.5	25.7
513.soma_t	OMP	16	16	139	26.7	<b>139</b>	<b>26.7</b>	139	26.7	OMP	16	16	139	26.7	<b>139</b>	<b>26.7</b>	139	26.7
518.tealeaf_t	OMP	16	16	<b>184</b>	<b>8.99</b>	184	8.98	184	8.99	OMP	16	16	<b>184</b>	<b>8.99</b>	184	8.98	184	8.99
519.civleaf_t	OMP	16	16	185	8.93	<b>185</b>	<b>8.92</b>	185	8.92	OMP	16	16	185	8.93	<b>185</b>	<b>8.92</b>	185	8.92
521.miniswp_t	OMP	16	16	98.9	16.2	<b>98.8</b>	<b>16.2</b>	98.8	16.2	OMP	16	16	98.9	16.2	<b>98.8</b>	<b>16.2</b>	98.8	16.2
528.pot3d_t	OMP	16	16	263	8.07	264	8.04	<b>264</b>	<b>8.05</b>	OMP	16	16	263	8.07	264	8.04	<b>264</b>	<b>8.05</b>
532.sph_exa_t	OMP	16	16	95.6	20.4	<b>96.9</b>	<b>20.1</b>	97.4	20.0	OMP	16	16	95.6	20.4	<b>96.9</b>	<b>20.1</b>	97.4	20.0
534.hpgmgfv_t	OMP	16	16	126	9.35	<b>126</b>	<b>9.32</b>	127	9.29	OMP	16	16	126	9.35	<b>126</b>	<b>9.32</b>	127	9.29
535.weather_t	OMP	16	16	25.6	126	25.7	125	<b>25.7</b>	<b>126</b>	OMP	16	16	25.6	126	25.7	125	<b>25.7</b>	<b>126</b>

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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  
Compute Node: Hyper A+ Server AS -2126HS-TN  
Compute Nodes Used: 1  
Total Chips: 2  
Total Cores: 128  
Total Threads: 256  
Total Memory: 1536 GB  
Max. Peak Threads: 16

### Software Summary

Compiler: Intel oneAPI DPC++/C++ Compiler 2024.2.1  
MPI Library: OpenMPI Version 5.0.5  
Other MPI Info: None  
Other Software: None  
Base Parallel Model: OMP  
Base Ranks Run: 16  
Base Threads Run: 16  
Peak Parallel Models: OMP  
Minimum Peak Ranks: 16  
Maximum Peak Ranks: 16  
Max. Peak Threads: 16  
Min. Peak Threads: 16

### Node Description: Hyper A+ Server AS -2126HS-TN

#### Hardware

Number of nodes: 1  
Uses of the node: compute  
Vendor: Supermicro  
Model: Hyper A+ Server AS -2126HS-TN  
CPU Name: AMD EPYC 9555  
CPU(s) orderable: 1,2 chips  
Chips enabled: 2  
Cores enabled: 128  
Cores per chip: 64  
Threads per core: 2  
CPU Characteristics: Max. Boost Clock upto 4.4GHz  
CPU MHz: 3200  
Primary Cache: 32 KB I + 48 KB D on chip per core  
Secondary Cache: 1 MB I+D on chip per core  
L3 Cache: 256 MB I+D on chip per chip,  
32 MB shared / 8 cores  
Other Cache: None  
Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-6400B-R,  
running at 6000)  
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: None  
Data Rate: None

#### Software

Accelerator Driver: --  
Adapter: None  
Adapter Driver: None  
Adapter Firmware: None  
Operating System: Ubuntu 24.04 LTS  
Kernel 6.8.0-44-generic  
Local File System: ext4  
Shared File System: None  
System State: Multi-user, run level 3  
Other Software: None

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### Node Description: Hyper A+ Server AS -2126HS-TN

#### Hardware (Continued)

Ports Used: 0  
Interconnect Type: None

### Submit Notes

The config file option 'submit' was used.

```
mpirun -np $ranks --bind-to core:overload-allowed --map-by ppr:1:numa:pe=16 --mca topo basic $command
```

### General Notes

MPI startup command:  
mpirun command was used to start MPI jobs.

### Compiler Version Notes

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

Intel(R) oneAPI DPC++/C++ Compiler 2024.2.1 (2024.2.1.20240711)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir:

/home/amd/spack/opt/spack/linux-ubuntu24.04-zen4/gcc-13.2.0/intel-oneapi-compilers-2024.2.1-njykuawredfxjir45iz3erssyetxux3c/compiler/2024.2/bin/compiler

Configuration file:

/home/amd/spack/opt/spack/linux-ubuntu24.04-zen4/gcc-13.2.0/intel-oneapi-compilers-2024.2.1-njykuawredfxjir45iz3erssyetxux3c/compiler/2024.2/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 2024.2.1 (2024.2.1.20240711)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir:

/home/amd/spack/opt/spack/linux-ubuntu24.04-zen4/gcc-13.2.0/intel-oneapi-compilers-2024.2.1-njykuawredfxjir45iz3erssyetxux3c/compiler/2024.2/bin/compiler

Configuration file:

/home/amd/spack/opt/spack/linux-ubuntu24.04-zen4/gcc-13.2.0/intel-oneapi-compilers-2024.2.1-njykuawredfxjir45iz3erssyetxux3c/compiler/2024.2/bin/compiler/./icx.cfg  
-----

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

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## Compiler Version Notes (Continued)

-----  
ifx (IFX) 2024.2.1 20240711  
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-----

## Base Compiler Invocation

C benchmarks:  
mpicc

C++ benchmarks:  
mpicxx

Fortran benchmarks:  
mpifort

## Base Portability Flags

505.lbm\_t: -DSPEC\_LP64  
513.soma\_t: -DSPEC\_NO\_VAR\_ARRAY\_REDUCE -DSPEC\_LP64  
518.tealeaf\_t: -DSPEC\_LP64  
521.miniswp\_t: -DSPEC\_LP64  
532.sph\_exa\_t: -DSPEC\_LP64  
534.hpgmgfv\_t: -DSPEC\_LP64

## Base Optimization Flags

C benchmarks:  
-Ofast -ipo -mprefer-vector-width=512 -march=skylake-avx512  
-mtune=skylake-avx512 -qopenmp -ansi-alias

C++ benchmarks:  
-Ofast -ipo -mprefer-vector-width=512 -march=skylake-avx512  
-mtune=skylake-avx512 -qopenmp -ansi-alias

Fortran benchmarks:  
-Ofast -ipo -mprefer-vector-width=512 -march=skylake-avx512  
-mtune=skylake-avx512 -qopenmp -ansi-alias -nostandard-realloc-lhs  
-align array64byte



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## Base Other Flags

C benchmarks:

-limf

C++ benchmarks:

-limf

Fortran benchmarks:

-limf

## Peak Compiler Invocation

C benchmarks:

mpicc

C++ benchmarks:

mpicxx

Fortran benchmarks:

mpifort

## Peak Portability Flags

505.lbm\_t: -DSPEC\_LP64  
513.soma\_t: -DSPEC\_NO\_VAR\_ARRAY\_REDUCE -DSPEC\_LP64  
518.tealeaf\_t: -DSPEC\_LP64  
521.miniswp\_t: -DSPEC\_LP64  
532.sph\_exa\_t: -DSPEC\_LP64  
534.hpgmgfv\_t: -DSPEC\_LP64

## Peak Optimization Flags

C benchmarks:

505.lbm\_t: basepeak = yes

513.soma\_t: basepeak = yes

518.tealeaf\_t: basepeak = yes

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## Peak Optimization Flags (Continued)

521.miniswp\_t: basepeak = yes

534.hpgmgfv\_t: basepeak = yes

C++ benchmarks:

532.sph\_exa\_t: basepeak = yes

Fortran benchmarks:

519.clvleaf\_t: basepeak = yes

528.pot3d\_t: basepeak = yes

535.weather\_t: basepeak = yes

## Peak Other Flags

C benchmarks:

-limf

C++ benchmarks:

-limf

Fortran benchmarks:

-limf

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

[http://www.spec.org/hpc2021/flags/Intel\\_compiler\\_flags\\_hpc.2024.2024-10-10.html](http://www.spec.org/hpc2021/flags/Intel_compiler_flags_hpc.2024.2024-10-10.html)

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

[http://www.spec.org/hpc2021/flags/Intel\\_compiler\\_flags\\_hpc.2024.2024-10-10.xml](http://www.spec.org/hpc2021/flags/Intel_compiler_flags_hpc.2024.2024-10-10.xml)

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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

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