SPEChpc™ 2021 Tiny Result

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Supermicro

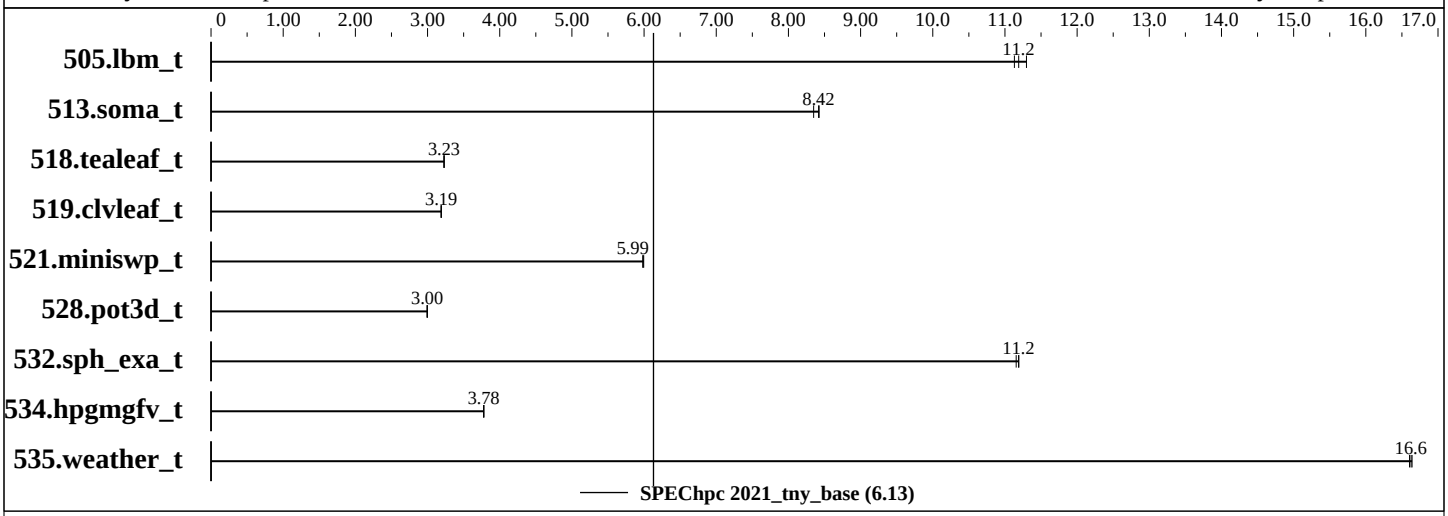
WIO SuperServer SYS-512B-WR
(Intel Xeon 6781P)

SPEChpc 2021_tny_base = 6.13

SPEChpc 2021_tny_peak = Not Run

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

Test Date: May-2025
Hardware Availability: Feb-2025
Software Availability: Apr-2025



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	160	1	199	11.3	202	11.1	**201**	**11.2**									
513.soma_t	MPI	160	1	**440**	**8.42**	439	8.43	443	8.35									
518.tealeaf_t	MPI	160	1	511	3.23	**511**	**3.23**	511	3.23									
519.clvleaf_t	MPI	160	1	517	3.19	517	3.19	**517**	**3.19**									
521.miniswp_t	MPI	160	1	267	5.99	267	5.98	**267**	**5.99**									
528.pot3d_t	MPI	160	1	**709**	**3.00**	710	2.99	709	3.00									
532.sph_exa_t	MPI	160	1	174	11.2	**174**	**11.2**	175	11.2									
534.hpgmgfv_t	MPI	160	1	311	3.78	**311**	**3.78**	311	3.78									
535.weather_t	MPI	160	1	194	16.6	**194**	**16.6**	194	16.6									

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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:	WIO SuperServer SYS-512B-WR
Interconnect:	None
Compute Nodes Used:	1
Total Chips:	1
Total Cores:	80
Total Threads:	160
Total Memory:	512 GB
Total Accelerators:	0
Max. Peak Threads:	--

Software Summary

Compiler:	C/C++/Fortran: Version 2025.1.1 of Intel oneAPI Compiler
MPI Library:	Intel MPI Library for Linux* OS, Version 2021.15 Build 20250213
Other MPI Info:	None
Other Software:	None
Base Parallel Model:	MPI
Base Ranks Run:	160
Base Threads Run:	1
Peak Parallel Models:	Not Run
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--
Max. Peak Threads:	--
Min. Peak Threads:	--

Node Description: WIO SuperServer SYS-512B-WR

Hardware

Number of nodes:	1
Uses of the node:	compute
Vendor:	Supermicro
Model:	WIO SuperServer SYS-512B-WR
CPU Name:	Intel Xeon 6781P
CPU(s) orderable:	1 chip
Chips enabled:	1
Cores enabled:	80
Cores per chip:	80
Threads per core:	2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.8 GHz
CPU MHz:	2000
Primary Cache:	64 KB I + 48 KB D on chip per core
Secondary Cache:	2 MB I+D on chip per core
L3 Cache:	336 MB I+D on chip per chip
Other Cache:	None
Memory:	512 GB (8 x 64 GB 2Rx4 PC5-6400B-R)
Disk Subsystem:	1 x 256 GB M.2 NVMe SSD
Other Hardware:	None
Accel Count:	0
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

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Software

Accelerator Driver:	None
Adapter:	None
Adapter Driver:	None
Adapter Firmware:	None
Operating System:	SUSE Linux Enterprise Linux Server 15 SP6 6.4.0-150600.21-default
Local File System:	btrfs
Shared File System:	None
System State:	Multi-user, run level 3
Other Software:	None

Node Description: WIO SuperServer SYS-512B-WR

Hardware (Continued)

Ports Used: 0
Interconnect Type: None

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: None

Software

: --

Submit Notes

```
The config file option 'submit' was used.
```

General Notes

```
MPI startup command:
  mpirun command (mpiexec) was used to start MPI jobs.
```

Compiler Version Notes

```
==============================================================================
 CXXC 532.sph_exa_t(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler 2025.1.1 (2025.1.1.20250418)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/intel/oneapi/compiler/2025.1/bin/compiler
Configuration file: /opt/intel/oneapi/compiler/2025.1/bin/compiler/../icpx.cfg
------------------------------------------------------------------------------

==============================================================================
 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 2025.1.1 (2025.1.1.20250418)
```

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Compiler Version Notes (Continued)

```
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/intel/oneapi/compiler/2025.1/bin/compiler
Configuration file: /opt/intel/oneapi/compiler/2025.1/bin/compiler/../icx.cfg
------------------------------------------------------------------------------

==============================================================================
 FC  519.clvleaf_t(base) 535.weather_t(base)
------------------------------------------------------------------------------
ifx (IFX) 2025.1.1 20250418
Copyright (C) 1985-2025 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
 FC  528.pot3d_t(base)
------------------------------------------------------------------------------
ifx: command line warning #10157: ignoring option '-W'; argument is of wrong
  type
ifx (IFX) 2025.1.1 20250418
Copyright (C) 1985-2025 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++`
518.tealeaf_t: `-lstdc++`
519.clvleaf_t: `-lstdc++`
521.miniswp_t: `-lstdc++`
528.pot3d_t: `-lstdc++`
532.sph_exa_t: `-lstdc++ -std=c++14`
534.hpgmgfv_t: `-lstdc++`

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Base Portability Flags (Continued)

535.weather_t: `-lstdc++`

Base Optimization Flags

C benchmarks:
`-O3 -ipo -xCORE-AVX512 -mprefer-vector-width=512 -qopt-multiple-gather-scatter-by-shuffles -ffast-math -flto -funroll-loops -fimf-precision=low:sin,sqrt -ansi-alias`

C++ benchmarks:
`-O3 -ipo -xCORE-AVX512 -mprefer-vector-width=512 -qopt-multiple-gather-scatter-by-shuffles -ffast-math -flto -funroll-loops -fimf-precision=low:sin,sqrt -ansi-alias`

Fortran benchmarks:
`-O3 -ipo -xCORE-AVX512 -mprefer-vector-width=512 -qopt-multiple-gather-scatter-by-shuffles -ffast-math -flto -funroll-loops -fimf-precision=low:sin,sqrt -nostandard-realloc-lhs -align array64byte`

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 -Wno-incompatible-function-pointer-types`

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.2025-05-22.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2025-05-22.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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