SPEChpc™ 2021 Tiny Result

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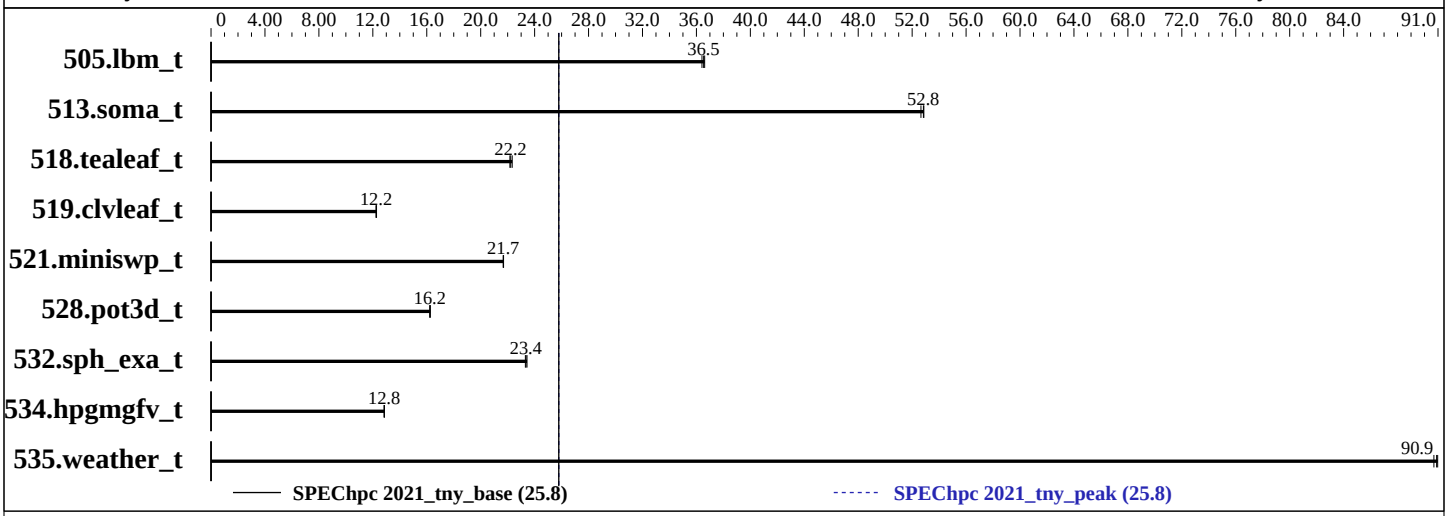
Lenovo
SR860 V4(Intel Xeon 6788P)

SPEChpc 2021_tny_base = 25.8

SPEChpc 2021_tny_peak = 25.8

hpc2021 License: 9017
Test Sponsor: Lenovo
Tested by: Lenovo

Test Date: Sep-2025
Hardware Availability: Sep-2025
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	Seconds	Ratio
505.lbm_t	OMP	8	86	61.8	36.4	**61.6**	**36.5**	61.5	36.6	OMP	8	86	61.8	36.4	**61.6**	**36.5**	61.5	36.6
513.soma_t	OMP	8	86	70.0	52.9	70.3	52.7	**70.0**	**52.8**	OMP	8	86	70.0	52.9	70.3	52.7	**70.0**	**52.8**
518.tealeaf_t	OMP	8	86	73.9	22.3	**74.2**	**22.2**	74.4	22.2	OMP	8	86	73.9	22.3	**74.2**	**22.2**	74.4	22.2
519.clvleaf_t	OMP	8	86	135	12.2	**135**	**12.2**	134	12.3	OMP	8	86	135	12.2	**135**	**12.2**	134	12.3
521.miniswp_t	OMP	8	86	73.7	21.7	73.8	21.7	**73.8**	**21.7**	OMP	8	86	73.7	21.7	73.8	21.7	**73.8**	**21.7**
528.pot3d_t	OMP	8	86	131	16.2	**131**	**16.2**	131	16.3	OMP	8	86	131	16.2	**131**	**16.2**	131	16.3
532.sph_exa_t	OMP	8	86	83.6	23.3	83.2	23.4	**83.5**	**23.4**	OMP	8	86	83.6	23.3	83.2	23.4	**83.5**	**23.4**
534.hpgmgfv_t	OMP	8	86	91.4	12.8	**91.4**	**12.8**	91.5	12.8	OMP	8	86	91.4	12.8	**91.4**	**12.8**	91.5	12.8
535.weather_t	OMP	8	86	35.4	91.0	**35.5**	**90.9**	35.6	90.7	OMP	8	86	35.4	91.0	**35.5**	**90.9**	35.6	90.7

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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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Test Date: Sep-2025
Hardware Availability: Sep-2025
Software Availability: Jun-2025

Hardware Summary

Type of System:	Homogenous Cluster
Compute Node:	SR860 V4(Intel Xeon 6788P)
Interconnect:	None
Compute Nodes Used:	1
Total Chips:	4
Total Cores:	344
Total Threads:	688
Total Memory:	1 TB
Total Accelerators:	0
Max. Peak Threads:	86

Software Summary

Compiler:	Intel oneAPI Compiler 2025.2.1
MPI Library:	Intel MPI Library 2021.16 for Linux OS
Other MPI Info:	None
Other Software:	None
Base Parallel Model:	OMP
Base Ranks Run:	8
Base Threads Run:	86
Peak Parallel Models:	OMP
Minimum Peak Ranks:	8
Maximum Peak Ranks:	8
Max. Peak Threads:	86
Min. Peak Threads:	86

Node Description: SR860 V4(Intel Xeon 6788P)

Hardware

Number of nodes:	1
Uses of the node:	Compute
Vendor:	Intel
Model:	SR860 V4(Intel Xeon 6788P)
CPU Name:	Intel Xeon 6788P
CPU(s) orderable:	4 chips
Chips enabled:	4
Cores enabled:	344
Cores per chip:	86
Threads per core:	2
CPU Characteristics:	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:	1 TB (16 x 64 GB 2Rx4 PC5-6400B-R)
Disk Subsystem:	1 x 1.92 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
Ports Used:	0
Interconnect Type:	None

Software

Accelerator Driver:	None
Adapter:	None
Adapter Driver:	None
Adapter Firmware:	None
Operating System:	Ubuntu 24.02.2 LTS 6.8.0-79-generic
Local File System:	ext4
Shared File System:	None
System State:	Run level 5
Other Software:	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.
```

Compiler Version Notes

```
==============================================================================
 CXXC 532.sph_exa_t(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler 2025.2.1 (2025.2.0.20250806)
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) 513.soma_t(base) 518.tealeaf_t(base) 521.miniswp_t(base)
     534.hpgmgfv_t(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler 2025.2.1 (2025.2.0.20250806)
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) 528.pot3d_t(base) 535.weather_t(base)
------------------------------------------------------------------------------
ifx (IFX) 2025.2.1 20250806
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------------------------------------------------------------------------------
```

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`

Base Other Flags

C benchmarks (except as noted below):
`-Ispecmpitime -Wno-incompatible-function-pointer-types`

(Continued on next page)

Base Other Flags (Continued)

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 Optimization Flags

C benchmarks:

505.lbm_t: `basepeak = yes`

513.soma_t: `basepeak = yes`

518.tealeaf_t: `basepeak = yes`

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`

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.

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