



SPEChpc™ 2021 Tiny Result

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Lenovo Global Technology

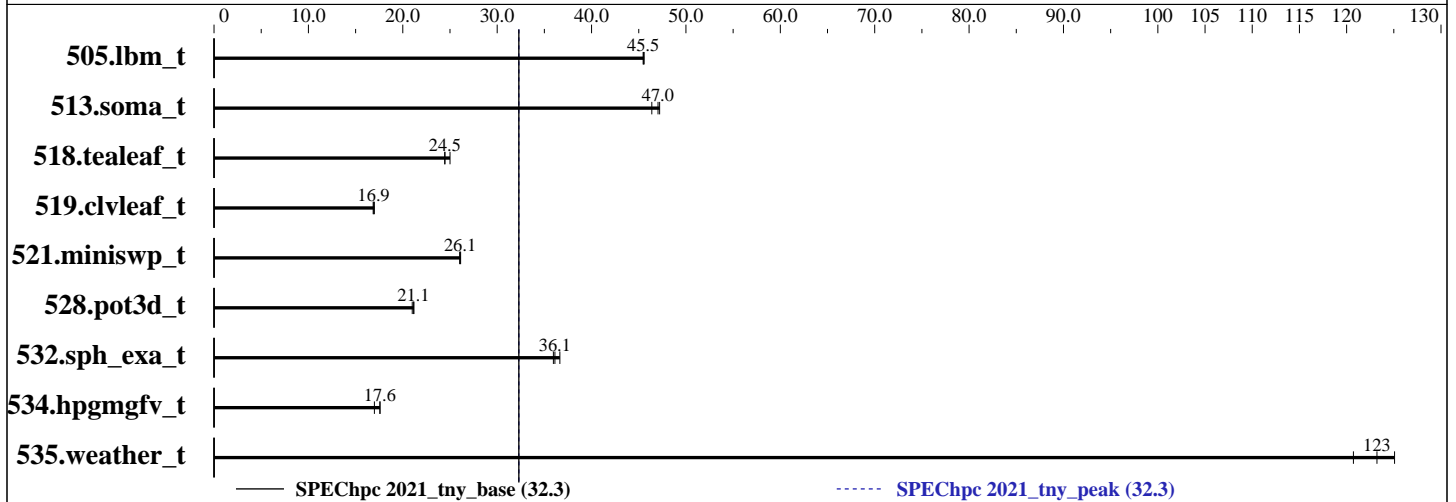
SPEChpc 2021_tny_base = 32.3

ThinkSystem SR950V3 (Intel Xeon 8490H)

SPEChpc 2021_tny_peak = 32.3

hpc2021 License: 28
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test Date: Aug-2024
Hardware Availability: Oct-2023
Software Availability: Jun-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	64	15	49.4	45.6	49.5	45.5	<u>49.5</u>	<u>45.5</u>	OMP	64	15	49.4	45.6	49.5	45.5	<u>49.5</u>	<u>45.5</u>
513.soma_t	OMP	64	15	78.4	47.2	78.7	47.0	79.8	46.4	OMP	64	15	78.4	47.2	78.7	47.0	79.8	46.4
518.tealeaf_t	OMP	64	15	66.0	25.0	67.5	24.4	67.4	24.5	OMP	64	15	66.0	25.0	67.5	24.4	67.4	24.5
519.clvleaf_t	OMP	64	15	<u>97.5</u>	<u>16.9</u>	97.1	17.0	97.9	16.9	OMP	64	15	<u>97.5</u>	<u>16.9</u>	97.1	17.0	97.9	16.9
521.miniswp_t	OMP	64	15	61.2	26.1	61.4	26.1	61.5	26.0	OMP	64	15	61.2	26.1	61.4	26.1	61.5	26.0
528.pot3d_t	OMP	64	15	100	21.1	101	21.0	100	21.2	OMP	64	15	100	21.1	101	21.0	100	21.2
532.sph_exa_t	OMP	64	15	53.2	36.6	54.2	36.0	54.0	36.1	OMP	64	15	53.2	36.6	54.2	36.0	54.0	36.1
534.hpgmgfv_t	OMP	64	15	66.8	17.6	66.8	17.6	69.2	17.0	OMP	64	15	66.8	17.6	66.8	17.6	69.2	17.0
535.weather_t	OMP	64	15	26.7	121	25.8	125	26.2	123	OMP	64	15	26.7	121	25.8	125	26.2	123

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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: ThinkSystem SR950V3
Interconnect: N/A
Compute Nodes Used: 1
Total Chips: 8
Total Cores: 480
Total Threads: 480
Total Memory: 4 TB
Max. Peak Threads: 15

Software Summary

Compiler: Intel oneAPI 2024 Update 2
Build 20240602
MPI Library: Intel MPI Library for Linux* OS
Version 2021 Update 13 Build 20240515
Other MPI Info: --
Other Software: --
Base Parallel Model: OMP
Base Ranks Run: 64
Base Threads Run: 15
Peak Parallel Models: OMP
Minimum Peak Ranks: 64
Maximum Peak Ranks: 64
Max. Peak Threads: 15
Min. Peak Threads: 15

Node Description: ThinkSystem SR950V3

Hardware

Number of nodes: 1
Uses of the node: compute
Vendor: Lenovo Global Technology
Model: ThinkSystem SR950V3
CPU Name: Intel Xeon 8490H
CPU(s) orderable: 8 chips
Chips enabled: 8
Cores enabled: 480
Cores per chip: 60
Threads per core: 1
CPU Characteristics: Intel Turbo Boost Technology up to 3.5 GHz
CPU MHz: 1900
Primary Cache: 32 KB I + 48 KB D on chip per core
Secondary Cache: 2 MB I+D on chip per core
L3 Cache: 115200 KB I+D on chip per chip
Other Cache: None
Memory: 4 TB (64 x 64 GB 2Rx4 PC4-4800V)
Disk Subsystem: 1 x 960 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: --
Adapter: None
Adapter Driver: None
Adapter Firmware: None
Operating System: Red Hat Enterprise Linux Server release 9,
Kernel 5.14.0-70.22.1.el9.x86_64
Local File System: xfs
Shared File System: None
System State: Multi-user, run level 3
Other Software: None



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Node Description: ThinkSystem SR950V3

Hardware (Continued)

Ports Used: 0
Interconnect Type: None

Interconnect Description: N/A

Hardware

Vendor: N/A
Model: N/A
Switch Model: N/A
Number of Switches: 0
Number of Ports: 0
Data Rate: N/A
Firmware: N/A
Topology: N/A
Primary Use: N/A

Software

: --

Submit Notes

The config file option 'submit' was used.

Compiler Version Notes

=====

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

```
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version
2024.2.0 Build 20240602
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
ifx: command line warning #10006: ignoring unknown option '-std=c++14'
ifx: command line warning #10157: ignoring option '-W'; argument is of wrong
type
ifx: command line error: no files specified; for help type "ifx -help"
```

=====

```
CXXC 532.sph_exa_t(base)
```

```
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2024.2.0 Build 20240602
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
icpx: warning: -Z-reserved-lib-stdc++: 'linker' input unused
[-Wunused-command-line-argument]
```

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Compiler Version Notes (Continued)

=====
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 for applications running on Intel(R) 64,
Version 2024.2.0 Build 20240602
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
icx: warning: -Z-reserved-lib-stdc++: 'linker' input unused
[-Wunused-command-line-argument]

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 -DSPEC_NO_VAR_ARRAY_REDUCE
518.tealeaf_t: -lstdc++ -std=c++14
519.clvleaf_t: -lstdc++ -std=c++14
521.miniswp_t: -lstdc++ -std=c++14
528.pot3d_t: -lstdc++ -std=c++14
532.sph_exa_t: -lstdc++ -std=c++14
534.hpgmgfv_t: -lstdc++ -std=c++14
535.weather_t: -lstdc++ -std=c++14

Base Optimization Flags

C benchmarks:
-Ofast -xCORE-AVX512 -ipo -mprefer-vector-width=512
-qopt-multiple-gather-scatter-by-shuffles -ffast-math -fltto

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Base Optimization Flags (Continued)

C benchmarks (continued):

`-funroll-loops -fimf-precision=low:sin,sqrt -fiopenmp -ansi-alias`

C++ benchmarks:

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

Fortran benchmarks:

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

Base Other Flags

C benchmarks (except as noted below):

`-Wno-incompatible-function-pointer-types`

513.soma_t: `-Wno-incompatible-function-pointer-types`

C++ benchmarks:

`-Wno-incompatible-function-pointer-types`

Fortran benchmarks:

`-Wno-incompatible-function-pointer-types`

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`

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Peak Optimization Flags (Continued)

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.2024-11-13.html

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

http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2024-11-13.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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