



SPEChpc™ 2021 Tiny Result

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Lenovo Global Technology

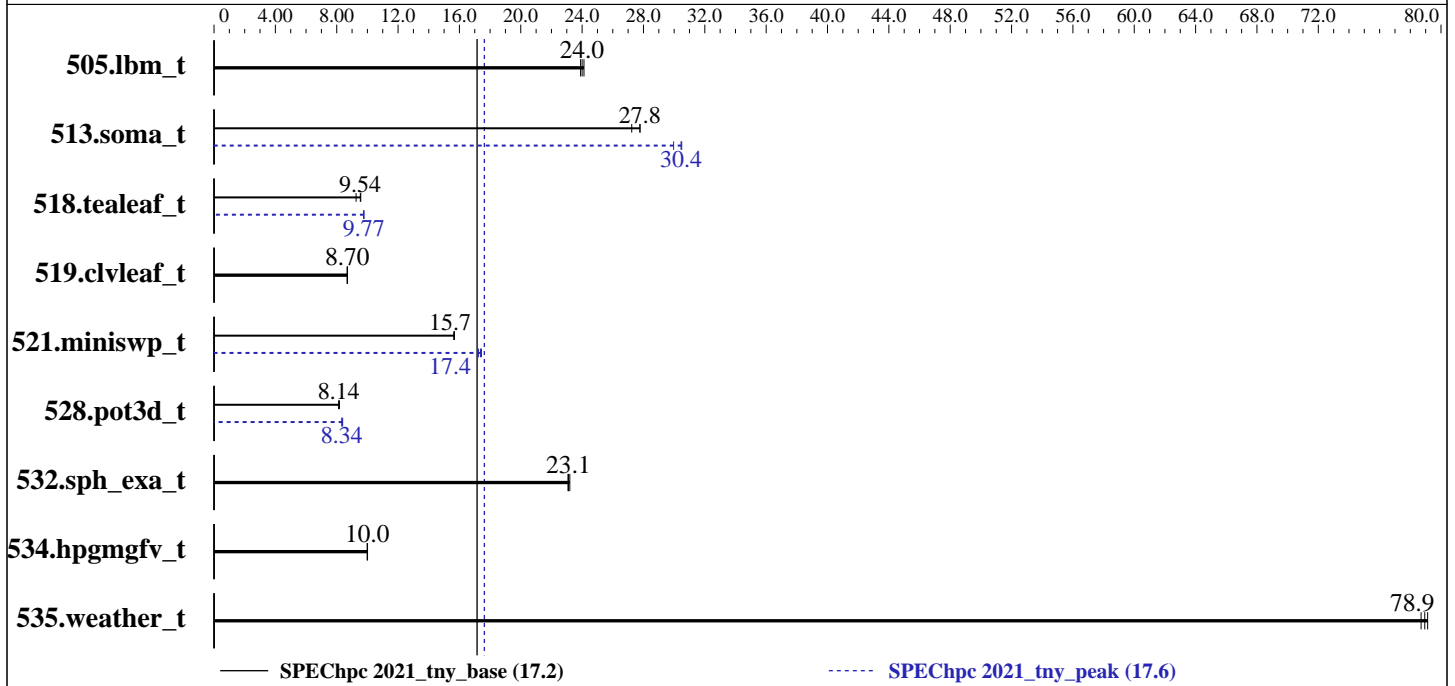
SPEChpc 2021_tny_base = 17.2

SPEChpc 2021_tny_peak = 17.6

ThinkSystem SR860 V3 (Intel Xeon Platinum 8490H, 1.90 GHz)

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

Test Date: Aug-2023
Hardware Availability: Aug-2023
Software Availability: Jun-2023



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 | 32 | 15 | 93.3 | 24.1 | 94.1 | 23.9 | 93.8 | 24.0 | OMP | 32 | 15 | 93.3 | 24.1 | 94.1 | 23.9 | 93.8 | 24.0 |
| 513.soma_t | OMP | 32 | 15 | 133 | 27.8 | 133 | 27.8 | 136 | 27.2 | OMP | 16 | 30 | 121 | 30.5 | 123 | 30.0 | 122 | 30.4 |
| 518.tealeaf_t | OMP | 32 | 15 | 172 | 9.57 | 178 | 9.26 | 173 | 9.54 | OMP | 16 | 30 | 169 | 9.75 | 169 | 9.77 | 169 | 9.77 |
| 519.civleaf_t | OMP | 32 | 15 | 190 | 8.70 | 190 | 8.68 | 190 | 8.70 | OMP | 32 | 15 | 190 | 8.70 | 190 | 8.68 | 190 | 8.70 |
| 521.miniswp_t | OMP | 32 | 15 | 102 | 15.7 | 102 | 15.6 | 102 | 15.7 | OMP | 16 | 30 | 92.8 | 17.2 | 92.1 | 17.4 | 91.7 | 17.4 |
| 528.pot3d_t | OMP | 32 | 15 | 261 | 8.13 | 261 | 8.14 | 260 | 8.17 | OMP | 16 | 30 | 255 | 8.33 | 253 | 8.39 | 255 | 8.34 |
| 532.sph_exa_t | OMP | 32 | 15 | 84.5 | 23.1 | 84.1 | 23.2 | 84.4 | 23.1 | OMP | 32 | 15 | 84.5 | 23.1 | 84.1 | 23.2 | 84.4 | 23.1 |
| 534.hpgmgfv_t | OMP | 32 | 15 | 118 | 9.99 | 118 | 10.0 | 117 | 10.0 | OMP | 32 | 15 | 118 | 9.99 | 118 | 10.0 | 117 | 10.0 |
| 535.weather_t | OMP | 32 | 15 | 40.8 | 79.1 | 41.0 | 78.7 | 40.9 | 78.9 | OMP | 32 | 15 | 40.8 | 79.1 | 41.0 | 78.7 | 40.9 | 78.9 |

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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: SMP
Compute Node: ThinkSystem SR860 V3
Compute Nodes Used: 1
Total Chips: 4
Total Cores: 240
Total Threads: 480
Total Memory: 2 TB
Max. Peak Threads: 30

Software Summary

Compiler: Intel oneAPI Compiler 2022.1.0
MPI Library: Intel MPI Library for Linux OS, Build 20220227
Other MPI Info: None
Other Software: None
Base Parallel Model: OMP
Base Ranks Run: 32
Base Threads Run: 15
Peak Parallel Models: OMP
Minimum Peak Ranks: 16
Maximum Peak Ranks: 32
Max. Peak Threads: 30
Min. Peak Threads: 15

Node Description: ThinkSystem SR860 V3

Hardware

Number of nodes: 1
Uses of the node: Compute
Vendor: Lenovo Global Technology
Model: ThinkSystem SR860 V3
CPU Name: Intel Xeon Platinum 8490H
CPU(s) orderable: 4 chips
Chips enabled: 4
Cores enabled: 240
Cores per chip: 60
Threads per core: 2
CPU Characteristics: Intel Turbo Boost Technology up to 3.5 GHz
CPU MHz: 1900
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 2 MB I+D on chip per core
L3 Cache: 112.5 MB I+D on chip per chip
Other Cache: None
Memory: 2 TB (32 x 64 GB 2Rx4 PC5-4800V)
Disk Subsystem: 1x ThinkSystem 2.5" 5300 480GB 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: Red Hat Enterprise Linux Server release 8.6,
Kernel 4.18.0-372.9.1.el8.x86_64
Local File System: xfs
Shared File System: None
System State: Multi-user, run level 3
Other Software: None



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Submit Notes

The config file option 'submit' was used.

Compiler Version Notes

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

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2022.2.0 Build 20220730
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
ifx: command line error: no files specified; for help type "ifx -help"

=====
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 for applications running on Intel(R) 64, Version 2022.2.0 Build 20220730
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
icx: warning: -Z-reserved-lib-stdc++: 'linker' input unused [-Wunused-command-line-argument]

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

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2022.2.0 Build 20220730
Copyright (C) 1985-2022 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=icx

Fortran benchmarks:
mpiifort -fc=ifx



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Base Portability Flags

```
505.lbm_t: -lstdc++
513.soma_t: -lstdc++ -DSPEC_NO_VAR_ARRAY_REDUCE
518.tealeaf_t: -lstdc++
519.clvleaf_t: -lstdc++
521.miniswp_t: -lstdc++
528.pot3d_t: -lstdc++
532.sph_exa_t: -lstdc++
534.hpgmgfv_t: -lstdc++
535.weather_t: -lstdc++
```

Base Optimization Flags

C benchmarks:

```
-Ofast -mprefer-vector-width=512 -xCORE-AVX512 -ipo -fiopenmp
-ansi-alias
```

C++ benchmarks:

```
-Ofast -mprefer-vector-width=512 -xCORE-AVX512 -ipo -fiopenmp
-ansi-alias
```

Fortran benchmarks:

```
-Ofast -mprefer-vector-width=512 -xCORE-AVX512 -ipo -fiopenmp
-nostandard-realloc-lhs -align array64byte
```

Peak Compiler Invocation

C benchmarks:

```
mpiicc -cc=icx
```

C++ benchmarks:

```
mpicpc -cxx=icx
```

Fortran benchmarks:

```
mpiifort -fc=ifx
```

Peak Portability Flags

Same as Base Portability Flags



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Peak Optimization Flags

C benchmarks:

505.lbm_t: basepeak = yes

513.soma_t: -Ofast -mprefer-vector-width=512 -xCORE-AVX512 -ipo
-fiopenmp -ansi-alias

518.tealeaf_t: Same as 513.soma_t

521.miniswp_t: Same as 513.soma_t

534.hpgmgfv_t: basepeak = yes

C++ benchmarks:

532.sph_exa_t: basepeak = yes

Fortran benchmarks:

519.clvleaf_t: basepeak = yes

528.pot3d_t: -Ofast -mprefer-vector-width=512 -xCORE-AVX512 -ipo
-fiopenmp -nostandard-realloc-lhs -align array64byte

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.2022-11-10.html

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

http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2022-11-10.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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