# SPEChpc™ 2021 Tiny Result

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## Lenovo Global Technology

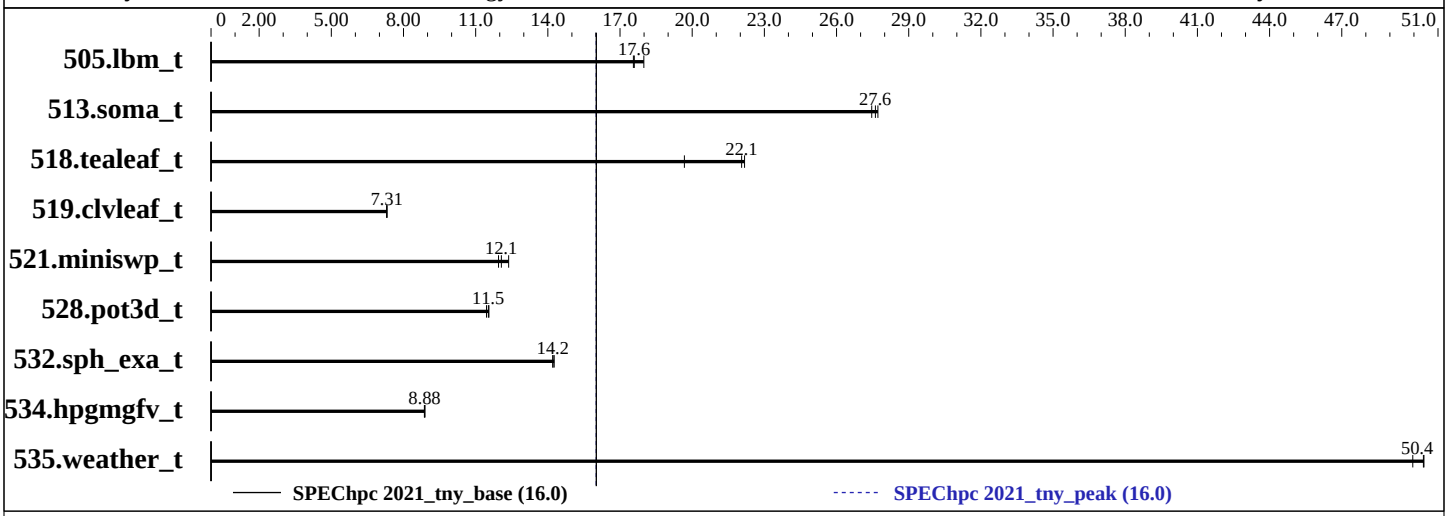
ThinkSystem SR665 V3 (AMD EPYC 9684X, 2.55 GHz)

SPEChpc 2021_tny_base = 16.0

SPEChpc 2021_tny_peak = 16.0

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

**Test Date:** Nov-2023
**Hardware Availability:** Dec-2023
**Software Availability:** Dec-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 | 24 | 16 | 128 | 17.6 | 125 | 18.0 | **128** | **17.6** | OMP | 24 | 16 | 128 | 17.6 | 125 | 18.0 | **128** | **17.6** |
| 513.soma_t | OMP | 24 | 16 | 135 | 27.5 | 133 | 27.7 | **134** | **27.6** | OMP | 24 | 16 | 135 | 27.5 | 133 | 27.7 | **134** | **27.6** |
| 518.tealeaf_t | OMP | 24 | 16 | 74.4 | 22.2 | **74.8** | **22.1** | 83.9 | 19.7 | OMP | 24 | 16 | 74.4 | 22.2 | **74.8** | **22.1** | 83.9 | 19.7 |
| 519.clvleaf_t | OMP | 24 | 16 | 226 | 7.31 | **226** | **7.31** | 226 | 7.31 | OMP | 24 | 16 | 226 | 7.31 | **226** | **7.31** | 226 | 7.31 |
| 521.miniswp_t | OMP | 24 | 16 | 134 | 11.9 | **133** | **12.1** | 129 | 12.4 | OMP | 24 | 16 | 134 | 11.9 | **133** | **12.1** | 129 | 12.4 |
| 528.pot3d_t | OMP | 24 | 16 | 186 | 11.5 | 184 | 11.6 | **184** | **11.5** | OMP | 24 | 16 | 186 | 11.5 | 184 | 11.6 | **184** | **11.5** |
| 532.sph_exa_t | OMP | 24 | 16 | 137 | 14.3 | **137** | **14.2** | 137 | 14.2 | OMP | 24 | 16 | 137 | 14.3 | **137** | **14.2** | 137 | 14.2 |
| 534.hpgmgfv_t | OMP | 24 | 16 | **132** | **8.88** | 132 | 8.87 | 132 | 8.89 | OMP | 24 | 16 | **132** | **8.88** | 132 | 8.87 | 132 | 8.89 |
| 535.weather_t | OMP | 24 | 16 | 64.6 | 50.0 | **64.0** | **50.4** | 64.0 | 50.4 | OMP | 24 | 16 | 64.6 | 50.0 | **64.0** | **50.4** | 64.0 | 50.4 |

**SPEChpc 2021_tny_base = 16.0**

**SPEChpc 2021_tny_peak = 16.0**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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**Test Date:** Nov-2023
**Hardware Availability:** Dec-2023
**Software Availability:** Dec-2023

### Hardware Summary

| | |
|---|---|
| Type of System: | SMP |
| Compute Node: | ThinkSystem SR665 V3 |
| Compute Nodes Used: | 1 |
| Total Chips: | 2 |
| Total Cores: | 96 |
| Total Threads: | 192 |
| Total Memory: | 768 GB |
| Max. Peak Threads: | 16 |

### 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: | 24 |
| Base Threads Run: | 16 |
| Peak Parallel Models: | OMP |
| Minimum Peak Ranks: | 24 |
| Maximum Peak Ranks: | 24 |
| Max. Peak Threads: | 16 |
| Min. Peak Threads: | 16 |

## Node Description: ThinkSystem SR665 V3

### Hardware

| | |
|---|---|
| Number of nodes: | 1 |
| Uses of the node: | Compute |
| Vendor: | Lenovo Global Technology |
| Model: | ThinkSystem SR665 V3 |
| CPU Name: | AMD EPYC 9684X |
| CPU(s) orderable: | 1,2 chips |
| Chips enabled: | 2 |
| Cores enabled: | 96 |
| Cores per chip: | 96 |
| Threads per core: | 2 |
| CPU Characteristics: | Max Boost Clock up to 3.7 GHz |
| CPU MHz: | 2550 |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 1 MB I+D on chip per core |
| L3 Cache: | 384 MB I+D on chip per chip<br>32 MB shared / 8 cores |
| Other Cache: | None |
| Memory: | 768 GB (32 x 32 GB 2Rx8 PC5-4800V) |
| Disk Subsystem: | 1x ThinkSystem 2.5" 480 GB 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 |

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### Software

| | |
|---|---|
| Accelerator Driver: | None |
| Adapter: | None |
| Adapter Driver: | None |
| Adapter Firmware: | None |
| Operating System: | Red Hat Enterprise Linux Server release 8.6,<br>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 |

## Node Description: ThinkSystem SR665 V3

**Hardware (Continued)**

Interconnect Type: None

## 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
  2022.1.0 Build 20220316
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) 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 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
clang: warning: -Z-reserved-lib-stdc++: 'linker' input unused
  [-Wunused-command-line-argument]
------------------------------------------------------------------------------

==============================================================================
 CXXC 532.sph_exa_t(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
  Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
clang: warning: -Z-reserved-lib-stdc++: 'linker' input unused
  [-Wunused-command-line-argument]
------------------------------------------------------------------------------
```

## Base Compiler Invocation

C benchmarks:

```
mpiicc -cc=icx
```

**(Continued on next page)**

## Base Compiler Invocation (Continued)

C++ benchmarks:
mpiicpc -cxx=icx

Fortran benchmarks:
mpiifort -fc=ifx

## 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 -march=core-avx2 -ipo -fiopenmp -ansi-alias

C++ benchmarks:
-Ofast -march=core-avx2 -ipo -fiopenmp -ansi-alias

Fortran benchmarks:
-Ofast -march=core-avx2 -ipo -fiopenmp -nostandard-realloc-lhs
-align array64byte

## Peak Optimization Flags

C benchmarks:

505.lbm_t: basepeak = yes

513.soma_t: basepeak = yes

**(Continued on next page)**

# Peak Optimization Flags (Continued)

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.2023-12-13.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2023-12-13.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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