# SPEChpc™ 2021 Tiny Result

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## Supermicro

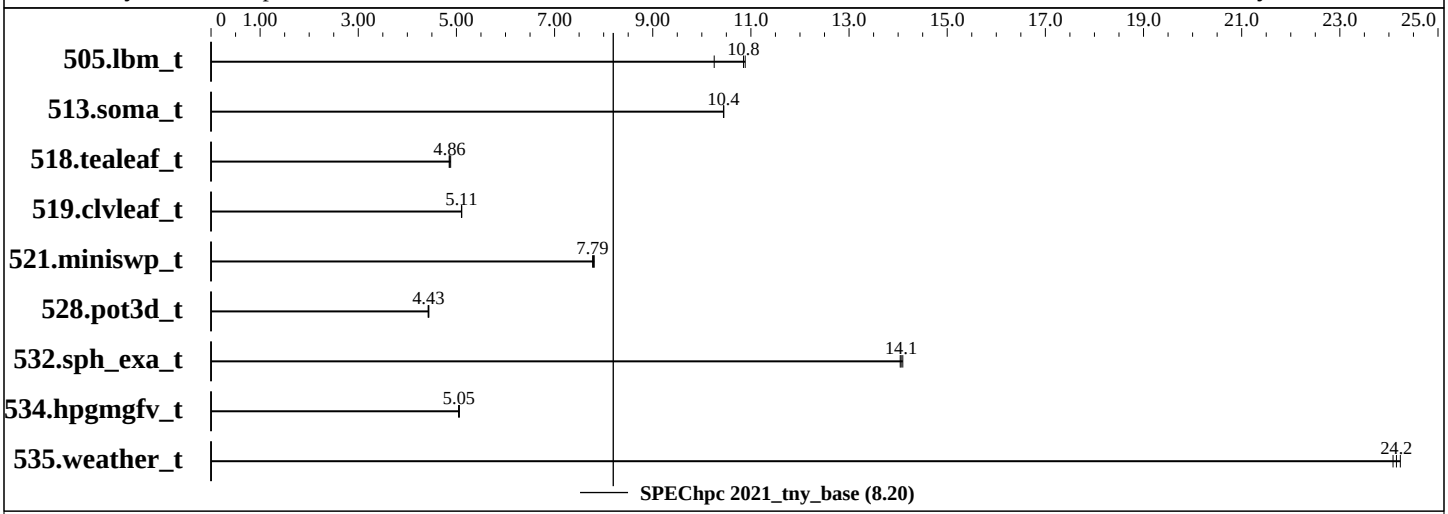
SuperServer SYS-741GE-TNRT (Intel Xeon Platinum 8490H)

SPEChpc 2021_tny_base = 8.20

SPEChpc 2021_tny_peak = Not Run

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

**Test Date:** Dec-2022
**Hardware Availability:** Jan-2023
**Software Availability:** Dec-2022




## 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 | 120 | 1 | 219 | 10.3 | **207** | **10.8** | 207 | 10.9 | | | | | | | | | |
| 513.soma_t | MPI | 120 | 1 | 354 | 10.4 | 354 | 10.4 | **354** | **10.4** | | | | | | | | | |
| 518.tealeaf_t | MPI | 120 | 1 | 340 | 4.85 | 338 | 4.88 | **339** | **4.86** | | | | | | | | | |
| 519.clvleaf_t | MPI | 120 | 1 | 323 | 5.10 | 323 | 5.11 | **323** | **5.11** | | | | | | | | | |
| 521.miniswp_t | MPI | 120 | 1 | 205 | 7.81 | **205** | **7.79** | 206 | 7.77 | | | | | | | | | |
| 528.pot3d_t | MPI | 120 | 1 | **480** | **4.43** | 480 | 4.42 | 479 | 4.44 | | | | | | | | | |
| 532.sph_exa_t | MPI | 120 | 1 | 138 | 14.1 | **139** | **14.1** | 139 | 14.0 | | | | | | | | | |
| 534.hpgmgfv_t | MPI | 120 | 1 | **232** | **5.05** | 232 | 5.06 | 233 | 5.04 | | | | | | | | | |
| 535.weather_t | MPI | 120 | 1 | 134 | 24.1 | 133 | 24.2 | **134** | **24.2** | | | | | | | | | |

**SPEChpc 2021_tny_base = 8.20**

**SPEChpc 2021_tny_peak = Not Run**

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

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**Software Availability:** Dec-2022

### Hardware Summary

| | |
|---|---|
| Type of System: | Homogenous |
| Compute Node: | SuperServer SYS-741GE-TNRT |
| Interconnect: | N/A |
| Compute Nodes Used: | 1 |
| Total Chips: | 2 |
| Total Cores: | 120 |
| Total Threads: | 240 |
| Total Memory: | 512 GB |
| Max. Peak Threads: | -- |

### Software Summary

| | |
|---|---|
| Compiler: | C/C++/Fortran: Version 2023.0.0 of Intel oneAPI Compiler |
| MPI Library: | Intel MPI Library for Linux* OS, Version 2021.8.0 Build 20221129 |
| Other MPI Info: | None |
| Other Software: | None |
| Base Parallel Model: | MPI |
| Base Ranks Run: | 120 |
| Base Threads Run: | 1 |
| Peak Parallel Models: | Not Run |
| Minimum Peak Ranks: | -- |
| Maximum Peak Ranks: | -- |
| Max. Peak Threads: | -- |
| Min. Peak Threads: | -- |

## Node Description: SuperServer SYS-741GE-TNRT

### Hardware

| | |
|---|---|
| Number of nodes: | 1 |
| Uses of the node: | Compute |
| Vendor: | Supermicro |
| Model: | SuperServer SYS-741GE-TNRT |
| CPU Name: | Intel Xeon Platinum 8490H |
| CPU(s) orderable: | 1, 2 chips |
| Chips enabled: | 2 |
| Cores enabled: | 120 |
| 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 + 48 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: | 512 GB (16 x 32 GB 2Rx8 PC5-4800B-R) |
| Disk Subsystem: | 1 x 256 GB Apacer M.2 NVMe SSD |
| Other Hardware: | None |
| Accel Count: | -- |
| Accel Model: | -- |
| Accel Vendor: | -- |
| Accel Type: | -- |
| Accel Connection: | -- |
| Accel ECC enabled: | -- |
| Accel Description: | -- |
| 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: | SUSE Linux Enterprise Server 15 SP4 Kernel 5.14.21-150400.22-default |
| Local File System: | xfs |
| Shared File System: | None |
| System State: | Multi-user, run level 3 |
| Other Software: | None |

## Node Description: SuperServer SYS-741GE-TNRT

### Hardware (Continued)

Ports Used: 0
Interconnect Type: None

## Interconnect Description: N/A

### Hardware

Vendor: N/A
Model: N/A
Switch Model: None
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.
```

## General Notes

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

## Compiler Version Notes

```
==============================================================================
 CXXC 532.sph_exa_t(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler 2023.0.0 (2023.0.0.20221201)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/intel/oneapi/compiler/2023.0.0/linux/bin-llvm
Configuration file:
  /opt/intel/oneapi/compiler/2023.0.0/linux/bin-llvm/../bin/icpx.cfg
------------------------------------------------------------------------------

==============================================================================
 CC  505.lbm_t(base) 513.soma_t(base) 518.tealeaf_t(base) 521.miniswp_t(base)
      534.hpgmgfv_t(base)
------------------------------------------------------------------------------
```

**(Continued on next page)**

## Compiler Version Notes (Continued)

```
Intel(R) oneAPI DPC++/C++ Compiler 2023.0.0 (2023.0.0.20221201)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/intel/oneapi/compiler/2023.0.0/linux/bin-llvm
Configuration file:
  /opt/intel/oneapi/compiler/2023.0.0/linux/bin-llvm/../bin/icx.cfg
------------------------------------------------------------------------------

==============================================================================
 FC  519.clvleaf_t(base) 535.weather_t(base)
------------------------------------------------------------------------------
ifx (IFORT) 2023.0.0 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
 FC  528.pot3d_t(base)
------------------------------------------------------------------------------
ifx: command line warning #10157: ignoring option '-W'; argument is of wrong
  type
ifx (IFORT) 2023.0.0 20221201
Copyright (C) 1985-2022 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++ -DSPEC_NO_VAR_ARRAY_REDUCE`
518.tealeaf_t: `-lstdc++`
519.clvleaf_t: `-lstdc++`
521.miniswp_t: `-lstdc++`
528.pot3d_t: `-lstdc++`

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## Base Portability Flags (Continued)

532.sph_exa_t: `-lstdc++`
534.hpgmgfv_t: `-lstdc++`
535.weather_t: `-lstdc++`

## Base Optimization Flags

C benchmarks:
`-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -ansi-alias`

C++ benchmarks:
`-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -ansi-alias`

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

## Base Other Flags

C benchmarks (except as noted below):
`-Ispecmpitime`

521.miniswp_t: `-Ispecmpitime/`

534.hpgmgfv_t: `-Ispecmpitime`

C++ benchmarks:
`-Ispecmpitime`

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.2023-02-09.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2023-02-09.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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