



SPEChpc™ 2021 Tiny Result

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Lenovo Global Technology

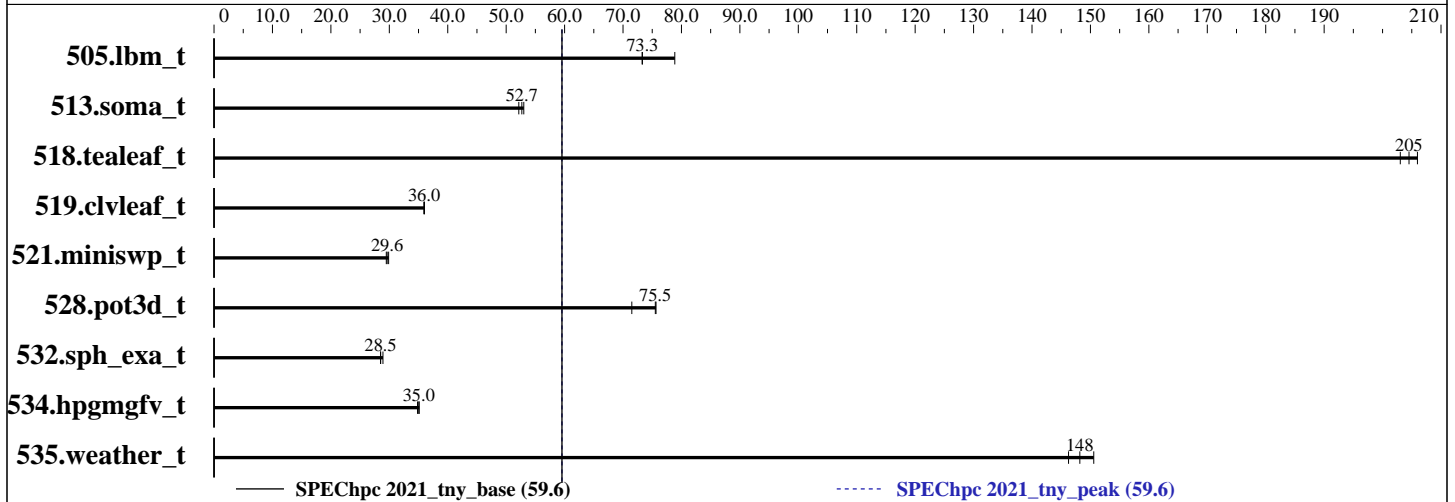
SPEChpc 2021_tny_base = 59.6

ThinkSystem SR665 V3 (AMD EPYC 9654)

SPEChpc 2021_tny_peak = 59.6

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

Test Date: Jan-2023
Hardware Availability: Nov-2022
Software Availability: Nov-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	OMP	120	8	30.7	73.3	28.5	78.9	30.7	73.3	OMP	120	8	30.7	73.3	28.5	78.9	30.7	73.3
513.soma_t	OMP	120	8	69.8	53.0	70.2	52.7	70.9	52.2	OMP	120	8	69.8	53.0	70.2	52.7	70.9	52.2
518.tealeaf_t	OMP	120	8	8.01	206	8.13	203	8.07	205	OMP	120	8	8.01	206	8.13	203	8.07	205
519.clvleaf_t	OMP	120	8	45.9	35.9	45.8	36.0	45.9	36.0	OMP	120	8	45.9	35.9	45.8	36.0	45.9	36.0
521.miniswp_t	OMP	120	8	54.0	29.6	53.5	29.9	54.3	29.5	OMP	120	8	54.0	29.6	53.5	29.9	54.3	29.5
528.pot3d_t	OMP	120	8	28.1	75.5	28.1	75.7	29.7	71.5	OMP	120	8	28.1	75.5	28.1	75.7	29.7	71.5
532.sph_exa_t	OMP	120	8	67.4	28.9	68.4	28.5	68.4	28.5	OMP	120	8	67.4	28.9	68.4	28.5	68.4	28.5
534.hpgmgfv_t	OMP	120	8	33.5	35.0	33.5	35.1	33.7	34.8	OMP	120	8	33.5	35.0	33.5	35.1	33.7	34.8
535.weather_t	OMP	120	8	21.4	151	22.1	146	21.8	148	OMP	120	8	21.4	151	22.1	146	21.8	148

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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: Homogeneous Cluster
Compute Node: ThinkSystem SR665 V3
Interconnect: Nvidia Mellanox ConnectX-6 HDR
Compute Nodes Used: 5
Total Chips: 10
Total Cores: 960
Total Threads: 1920
Total Memory: 7680 GB
Max. Peak Threads: 8

Software Summary

Compiler: Intel oneAPI Compiler 2022.1.0
MPI Library: Intel MPI Library for Linux OS, Build 20220227
Other MPI Info: --
Other Software: --
Base Parallel Model: OMP
Base Ranks Run: 120
Base Threads Run: 8
Peak Parallel Models: OMP
Minimum Peak Ranks: 120
Maximum Peak Ranks: 120
Max. Peak Threads: 8
Min. Peak Threads: 8

Node Description: ThinkSystem SR665 V3

Hardware

Number of nodes: 5
Uses of the node: Compute
Vendor: Lenovo Global Technology
Model: ThinkSystem SR665 V3
CPU Name: AMD EPYC 9654
CPU(s) orderable: 1,2 chips
Chips enabled: 2
Cores enabled: 192
Cores per chip: 96
Threads per core: 2
CPU Characteristics: Max Boost Clock up to 3.7 GHz
CPU MHz: 2400
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
32 MB shared / 8 cores
Other Cache: None
Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)
Disk Subsystem: 1x ThinkSystem 2.5" 5300 480GB SSD
Other Hardware: None
Accel Count: --
Accel Model: --
Accel Vendor: --
Accel Type: --
Accel Connection: --
Accel ECC enabled: --
Accel Description: --
Adapter: Nvidia Mellanox ConnectX-6 HDR
Number of Adapters: 1
Slot Type: PCI-Express 4.0 x16
Data Rate: 200 Gb/s
Ports Used: 1

Software

Accelerator Driver: --
Adapter: Nvidia Mellanox ConnectX-6 HDR
Adapter Driver: 5.7-1.0.2
Adapter Firmware: 20.28.1002
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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Node Description: ThinkSystem SR665 V3

Hardware (Continued)

Interconnect Type: ConnectX-6 HDR

Interconnect Description: Nvidia Mellanox ConnectX-6 HDR

Hardware

Vendor: Nvidia
Model: Nvidia Mellanox ConnectX-6 HDR
Switch Model: QM8700
Number of Switches: 1
Number of Ports: 40
Data Rate: 200 Gb/s
Firmware: 3.9.0606
Topology: Mesh
Primary Use: MPI Traffic, NFS Access

Software

: --

Submit Notes

The config file option 'submit' was used.

```
submit = mpiexec -hostfile ${top}/5nodes -np ranks -genv OMP_NUM_THREADS=$threads -ppn % {NRNK} $command
```

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

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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

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clang: warning: -Z-reserved-lib-stdc++: 'linker' input unused

[-Wunused-command-line-argument]

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Compiler Version Notes (Continued)

=====
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

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 -mprefer-vector-width=512 -march=core-avx2 -ipo -fiopenmp
-ansi-alias

C++ benchmarks:
-Ofast -mprefer-vector-width=512 -march=core-avx2 -ipo -fiopenmp

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Base Optimization Flags (Continued)

C++ benchmarks (continued):

-ansi-alias

Fortran benchmarks:

-Ofast -mprefer-vector-width=512 -march=core-avx2 -ipo -fiopenmp
-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.cvlleaf_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

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Peak Optimization Flags (Continued)

Fortran benchmarks:

519.cvlleaf_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.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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