



SPEChpc™ 2021 Small Result

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Lenovo Global Technology

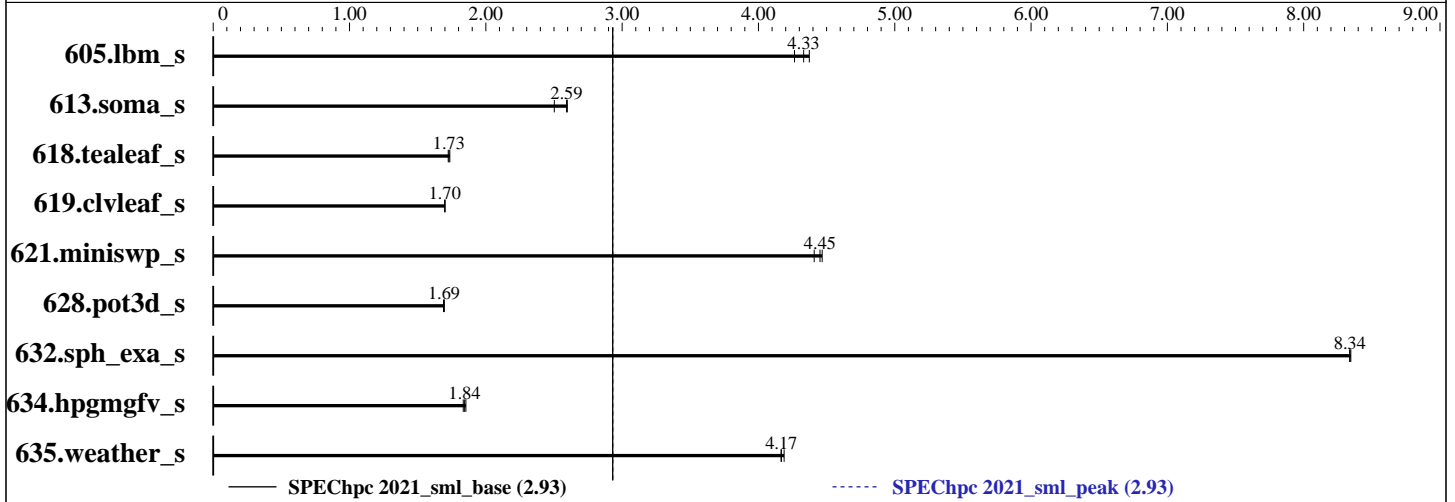
SPEChpc 2021_sml_base = 2.93

ThinkSystem SR950V3 (Intel Xeon 8490H)

SPEChpc 2021_sml_peak = 2.93

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
605.lbm_s	MPI	480	1	354	4.37	363	4.26	358	4.33	MPI	480	1	354	4.37	363	4.26	358	4.33
613.soma_s	MPI	480	1	616	2.60	617	2.59	639	2.50	MPI	480	1	616	2.60	617	2.59	639	2.50
618.tealeaf_s	MPI	480	1	1181	1.74	1189	1.72	1185	1.73	MPI	480	1	1181	1.74	1189	1.72	1185	1.73
619.cvlleaf_s	MPI	480	1	971	1.70	971	1.70	971	1.70	MPI	480	1	971	1.70	971	1.70	971	1.70
621.miniswp_s	MPI	480	1	249	4.41	246	4.47	247	4.45	MPI	480	1	249	4.41	246	4.47	247	4.45
628.pot3d_s	MPI	480	1	989	1.69	991	1.69	988	1.69	MPI	480	1	989	1.69	991	1.69	988	1.69
632.sph_exa_s	MPI	480	1	276	8.34	276	8.35	276	8.34	MPI	480	1	276	8.34	276	8.35	276	8.34
634.hpgmgfv_s	MPI	480	1	532	1.83	526	1.85	529	1.84	MPI	480	1	532	1.83	526	1.85	529	1.84
635.weather_s	MPI	480	1	624	4.17	624	4.17	621	4.19	MPI	480	1	624	4.17	624	4.17	621	4.19

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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: 1

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: MPI
Base Ranks Run: 480
Base Threads Run: 1
Peak Parallel Models: MPI
Minimum Peak Ranks: 480
Maximum Peak Ranks: 480
Max. Peak Threads: 1
Min. Peak Threads: 1

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 619.clvleaf_s(base) 628.pot3d_s(base) 635.weather_s(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 632.sph_exa_s(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 605.lbm_s(base) 613.soma_s(base) 618.tealeaf_s(base) 621.miniswp_s(base)
634.hpgmgfv_s(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

605.lbm_s: -lstdc++ -std=c++14
613.soma_s: -lstdc++ -std=c++14
618.tealeaf_s: -lstdc++ -std=c++14
619.clvleaf_s: -lstdc++ -std=c++14
621.miniswp_s: -lstdc++ -std=c++14
628.pot3d_s: -lstdc++ -std=c++14
632.sph_exa_s: -lstdc++ -std=c++14
634.hpgmgfv_s: -lstdc++ -std=c++14
635.weather_s: -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 -flto

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Base Optimization Flags (Continued)

C benchmarks (continued):

`-funroll-loops -fimf-precision=low:sin,sqrt -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 -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 -nostandard-realloc-lhs
-align array64byte`

Base Other Flags

C benchmarks:

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

C++ benchmarks:

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

Fortran benchmarks:

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

Peak Optimization Flags

C benchmarks:

605.lbm_s: basepeak = yes

613.soma_s: basepeak = yes

618.tealeaf_s: basepeak = yes

621.miniswp_s: basepeak = yes

634.hpgmgfv_s: basepeak = yes

C++ benchmarks:

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Peak Optimization Flags (Continued)

632.sph_exa_s: basepeak = yes

Fortran benchmarks:

619.clvleaf_s: basepeak = yes

628.pot3d_s: basepeak = yes

635.weather_s: 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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