SPEChpc™ 2021 Small Result

Copyright 2021-2024 Standard Performance Evaluation Corporation

Lenovo Global Technology

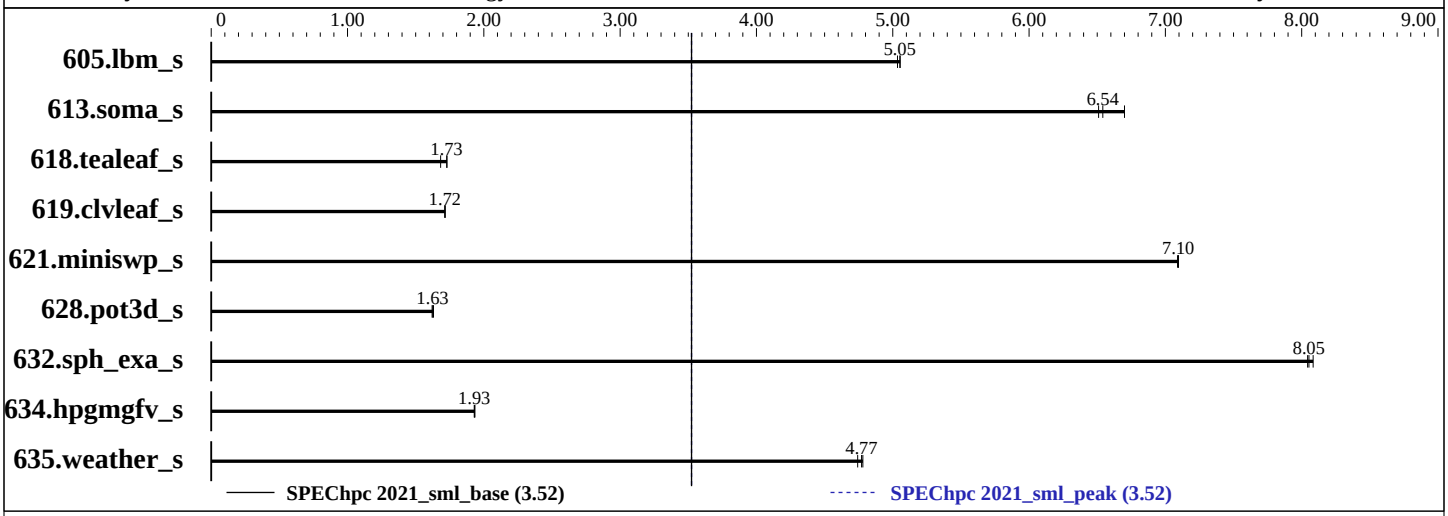
ThinkSystem SR950V3 (Intel Xeon 8490H)

SPEChpc 2021_sml_base = 3.52

SPEChpc 2021_sml_peak = 3.52

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	OMP	32	30	307	5.05	**307**	**5.05**	308	5.03	OMP	32	30	307	5.05	**307**	**5.05**	308	5.03
613.soma_s	OMP	32	30	**245**	**6.54**	239	6.70	246	6.51	OMP	32	30	**245**	**6.54**	239	6.70	246	6.51
618.tealeaf_s	OMP	32	30	**1186**	**1.73**	1218	1.68	1185	1.73	OMP	32	30	**1186**	**1.73**	1218	1.68	1185	1.73
619.clvleaf_s	OMP	32	30	963	1.71	962	1.72	**962**	**1.72**	OMP	32	30	963	1.71	962	1.72	**962**	**1.72**
621.miniswp_s	OMP	32	30	155	7.10	155	7.09	**155**	**7.10**	OMP	32	30	155	7.10	155	7.09	**155**	**7.10**
628.pot3d_s	OMP	32	30	1027	1.63	1034	1.62	**1031**	**1.63**	OMP	32	30	1027	1.63	1034	1.62	**1031**	**1.63**
632.sph_exa_s	OMP	32	30	285	8.08	286	8.04	**286**	**8.05**	OMP	32	30	285	8.08	286	8.04	**286**	**8.05**
634.hpgmgfv_s	OMP	32	30	504	1.93	505	1.93	**505**	**1.93**	OMP	32	30	504	1.93	505	1.93	**505**	**1.93**
635.weather_s	OMP	32	30	**545**	**4.77**	544	4.78	548	4.74	OMP	32	30	**545**	**4.77**	544	4.78	548	4.74

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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 Availability: Oct-2023
Software Availability: Jun-2024

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:	30

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:	OMP
Base Ranks Run:	32
Base Threads Run:	30
Peak Parallel Models:	OMP
Minimum Peak Ranks:	32
Maximum Peak Ranks:	32
Max. Peak Threads:	30
Min. Peak Threads:	30

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

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]
```

(Continued on next page)

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 -DSPEC_NO_VAR_ARRAY_REDUCE`
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 -fiopenmp -ansi-alias`

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Base Optimization Flags (Continued)

C++ benchmarks:
`-Ofast -xCORE-AVX512 -ipo -fiopenmp -ansi-alias`

Fortran benchmarks:
`-Ofast -xCORE-AVX512 -ipo -fiopenmp -nostandard-realloc-lhs -align array64byte`

Base Other Flags

C benchmarks (except as noted below):
`-Wno-incompatible-function-pointer-types`

613.soma_s: `-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:

632.sph_exa_s: `basepeak = yes`

Fortran benchmarks:

619.clvleaf_s: `basepeak = yes`

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Peak Optimization Flags (Continued)

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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