



SPEChpc™ 2021 Small Result

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Lenovo Global Technology

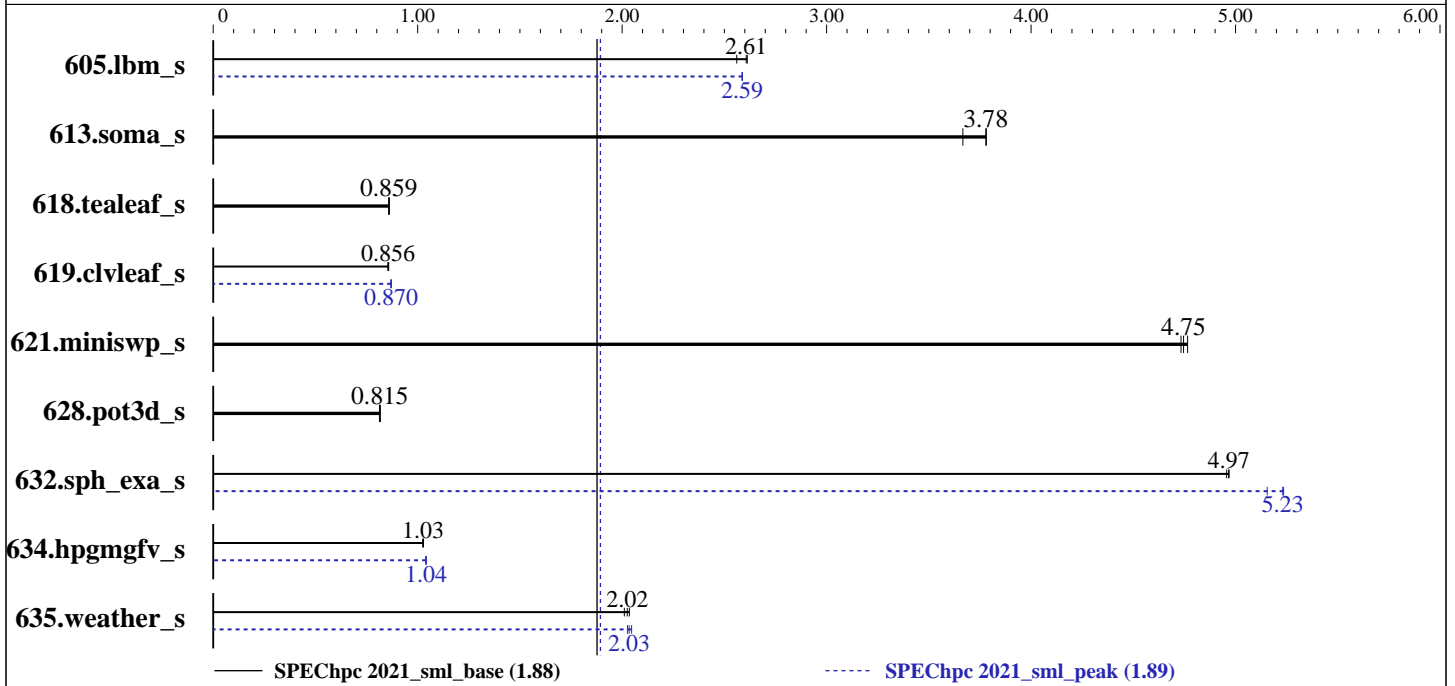
SPEChpc 2021_sml_base = 1.88

ThinkSystem SR860 V3 (Intel Xeon Platinum 8490H, 1.90 GHz)

SPEChpc 2021_sml_peak = 1.89

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

Test Date: Aug-2023
Hardware Availability: Aug-2023
Software Availability: Jun-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
605.lbm_s	OMP	16	30	595	2.61	605	2.56	593	2.61	OMP	32	15	599	2.59	599	2.59	599	2.59
613.soma_s	OMP	16	30	423	3.78	436	3.67	423	3.78	OMP	16	30	423	3.78	436	3.67	423	3.78
618.tealeaf_s	OMP	16	30	2386	0.859	2379	0.862	2388	0.858	OMP	16	30	2386	0.859	2379	0.862	2388	0.858
619.civleaf_s	OMP	16	30	1928	0.856	1931	0.855	1923	0.858	OMP	32	15	1897	0.870	1896	0.870	1896	0.870
621.miniswp_s	OMP	16	30	232	4.75	231	4.77	232	4.73	OMP	16	30	232	4.75	231	4.77	232	4.73
628.pot3d_s	OMP	16	30	2060	0.813	2050	0.817	2054	0.815	OMP	16	30	2060	0.813	2050	0.817	2054	0.815
632.sph_exa_s	OMP	16	30	464	4.96	463	4.97	463	4.97	OMP	32	15	439	5.24	440	5.23	446	5.15
634.hpgmgfv_s	OMP	16	30	952	1.02	949	1.03	948	1.03	OMP	32	15	937	1.04	936	1.04	938	1.04
635.weather_s	OMP	16	30	1293	2.01	1277	2.04	1284	2.02	OMP	32	15	1283	2.03	1278	2.03	1271	2.05

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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: SMP
Compute Node: ThinkSystem SR860 V3
Compute Nodes Used: 1
Total Chips: 4
Total Cores: 240
Total Threads: 480
Total Memory: 2 TB
Max. Peak Threads: 30

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: 16
Base Threads Run: 30
Peak Parallel Models: OMP
Minimum Peak Ranks: 16
Maximum Peak Ranks: 32
Max. Peak Threads: 30
Min. Peak Threads: 15

Node Description: ThinkSystem SR860 V3

Hardware

Number of nodes: 1
Uses of the node: Compute
Vendor: Lenovo Global Technology
Model: ThinkSystem SR860 V3
CPU Name: Intel Xeon Platinum 8490H
CPU(s) orderable: 4 chips
Chips enabled: 4
Cores enabled: 240
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 + 32 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: 2 TB (32 x 64 GB 2Rx4 PC5-4800V)
Disk Subsystem: 1x ThinkSystem 2.5" 5300 480GB 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
Interconnect Type: None

Software

Accelerator Driver: None
Adapter: None
Adapter Driver: None
Adapter Firmware: None
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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Submit Notes

The config file option 'submit' was used.

Compiler Version Notes

=====
FC 619.clvleaf_s(base, peak) 628.pot3d_s(base, peak) 635.weather_s(base, peak)

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2022.2.0 Build 20220730
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
ifx: command line error: no files specified; for help type "ifx -help"

=====
CC 605.lbm_s(base, peak) 613.soma_s(base, peak) 618.tealeaf_s(base, peak) 621.miniswp_s(base, peak) 634.hpvmgfv_s(base, peak)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2022.2.0 Build 20220730
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
icx: warning: -Z-reserved-lib-stdc++: 'linker' input unused
[-Wunused-command-line-argument]

=====
CXXC 632.sph_exa_s(base, peak)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2022.2.0 Build 20220730
Copyright (C) 1985-2022 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=icx

Fortran benchmarks:
mpiifort -fc=ifx



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Base Portability Flags

```
605.lbm_s: -lstdc++  
613.soma_s: -lstdc++ -DSPEC_NO_VAR_ARRAY_REDUCE  
618.tealeaf_s: -lstdc++  
619.clvleaf_s: -lstdc++  
621.miniswp_s: -lstdc++  
628.pot3d_s: -lstdc++  
632.sph_exa_s: -lstdc++  
634.hpgmgfv_s: -lstdc++  
635.weather_s: -lstdc++
```

Base Optimization Flags

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

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

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

Peak Compiler Invocation

C benchmarks:
mpiicc -cc=icx

C++ benchmarks:
mpicpc -cxx=icx

Fortran benchmarks:
mpiifort -fc=ifx

Peak Portability Flags

Same as Base Portability Flags



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Peak Optimization Flags

C benchmarks:

```
605.lbm_s: -Ofast -mprefer-vector-width=512 -xCORE-AVX512 -ipo  
-fiopenmp -ansi-alias
```

```
613.soma_s: basepeak = yes
```

```
618.tealeaf_s: basepeak = yes
```

```
621.miniswp_s: basepeak = yes
```

```
634.hpgmgfv_s: Same as 605.lbm_s
```

C++ benchmarks:

```
-Ofast -mprefer-vector-width=512 -xCORE-AVX512 -ipo -fiopenmp  
-ansi-alias
```

Fortran benchmarks:

```
619.clvleaf_s: -Ofast -mprefer-vector-width=512 -xCORE-AVX512 -ipo  
-fiopenmp -nostandard-realloc-lhs -align array64byte
```

```
628.pot3d_s: basepeak = yes
```

```
635.weather_s: Same as 619.clvleaf_s
```

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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