SPEChpc™ 2021 Tiny Result

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Lenovo Global Technology

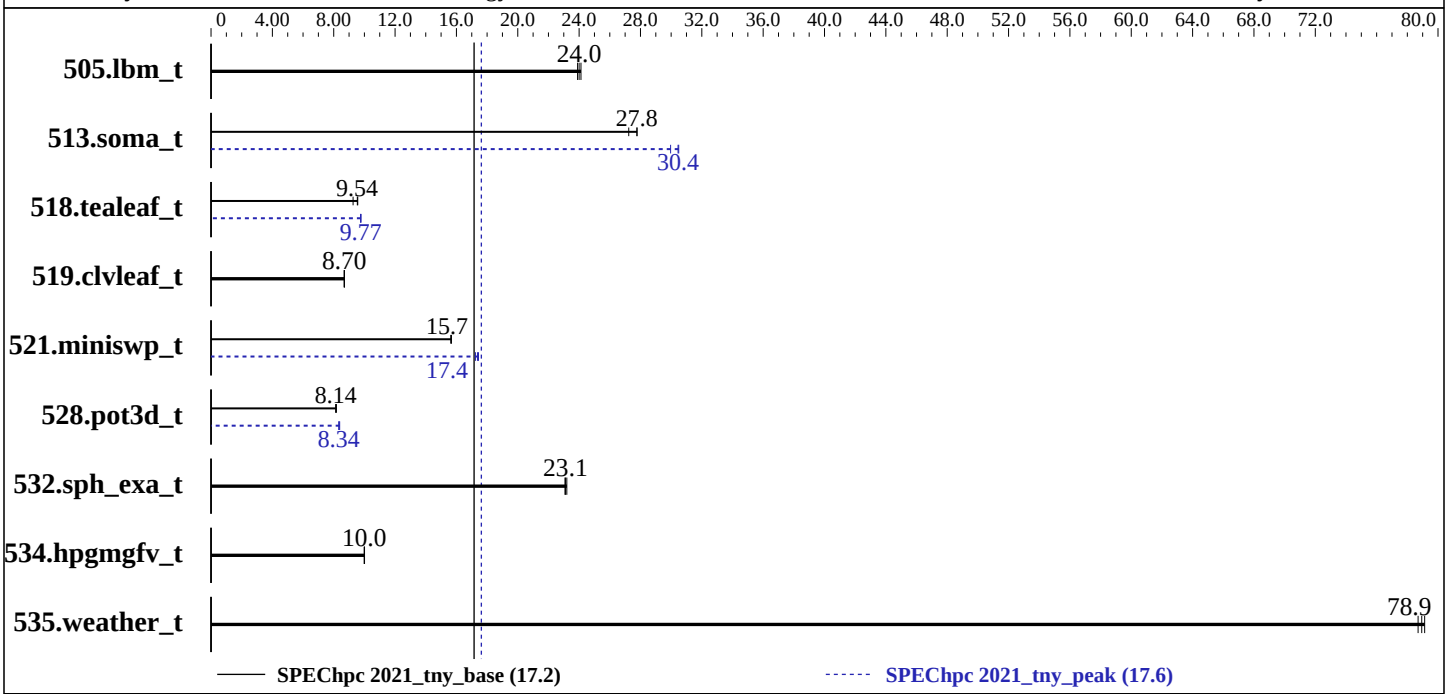
ThinkSystem SR860 V3 (Intel Xeon Platinum 8490H, 1.90 GHz)

SPEChpc 2021_tny_base = 17.2

SPEChpc 2021_tny_peak = 17.6

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
505.lbm_t	OMP	32	15	93.3	24.1	94.1	23.9	**93.8**	**24.0**	OMP	32	15	93.3	24.1	94.1	23.9	**93.8**	**24.0**
513.soma_t	OMP	32	15	**133**	**27.8**	133	27.8	136	27.2	OMP	16	30	121	30.5	123	30.0	**122**	**30.4**
518.tealeaf_t	OMP	32	15	172	9.57	178	9.26	**173**	**9.54**	OMP	16	30	169	9.75	169	9.77	**169**	**9.77**
519.clvleaf_t	OMP	32	15	190	8.70	190	8.68	**190**	**8.70**	OMP	32	15	190	8.70	190	8.68	**190**	**8.70**
521.miniswp_t	OMP	32	15	102	15.7	102	15.6	**102**	**15.7**	OMP	16	30	92.8	17.2	**92.1**	**17.4**	91.7	17.4
528.pot3d_t	OMP	32	15	261	8.13	**261**	**8.14**	260	8.17	OMP	16	30	255	8.33	253	8.39	**255**	**8.34**
532.sph_exa_t	OMP	32	15	84.5	23.1	84.1	23.2	**84.4**	**23.1**	OMP	32	15	84.5	23.1	84.1	23.2	**84.4**	**23.1**
534.hpgmgfv_t	OMP	32	15	118	9.99	**118**	**10.0**	117	10.0	OMP	32	15	118	9.99	**118**	**10.0**	117	10.0
535.weather_t	OMP	32	15	40.8	79.1	41.0	78.7	**40.9**	**78.9**	OMP	32	15	40.8	79.1	41.0	78.7	**40.9**	**78.9**

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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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Software Availability: Jun-2023

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
Total Accelerators:	0
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:	32
Base Threads Run:	15
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

Submit Notes

```
The config file option 'submit' was used.
```

Compiler Version Notes

```
==============================================================================
 FC  519.clvleaf_t(base, peak) 528.pot3d_t(base, peak) 535.weather_t(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  505.lbm_t(base, peak) 513.soma_t(base, peak) 518.tealeaf_t(base, peak)
     521.miniswp_t(base, peak) 534.hpgmgfv_t(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 532.sph_exa_t(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
```

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 -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`

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`

Peak Compiler Invocation

C benchmarks:
`mpiicc -cc=icx`

C++ benchmarks:
`mpiicpc -cxx=icx`

Fortran benchmarks:
`mpiifort -fc=ifx`

Peak Portability Flags

`Same as Base Portability Flags`

Peak Optimization Flags

C benchmarks:

505.lbm_t: `basepeak = yes`

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

518.tealeaf_t: `Same as 513.soma_t`

521.miniswp_t: `Same as 513.soma_t`

534.hpgmgfv_t: `basepeak = yes`

C++ benchmarks:

532.sph_exa_t: `basepeak = yes`

Fortran benchmarks:

519.clvleaf_t: `basepeak = yes`

528.pot3d_t: `-Ofast -mprefer-vector-width=512 -xCORE-AVX512 -ipo -fiopenmp -nostandard-realloc-lhs -align array64byte`

535.weather_t: `basepeak = yes`

Peak 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`

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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