SPEChpc™ 2021 Tiny Result

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Lenovo Global Technology

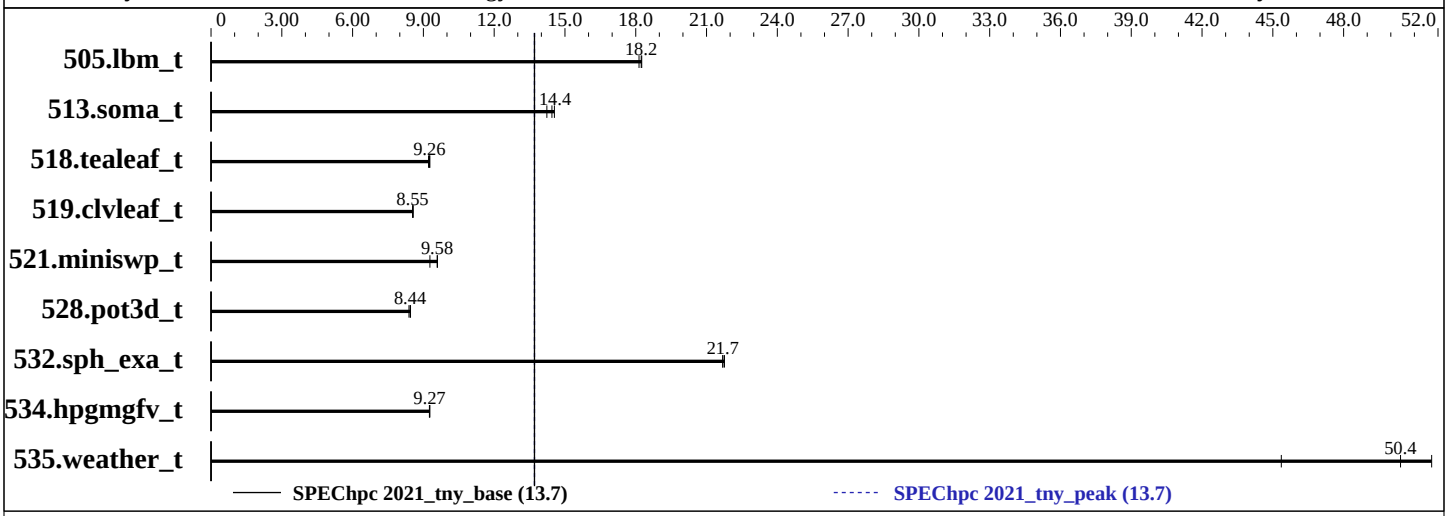
ThinkSystem SR860 V3 (Intel Xeon Platinum 8490H, 1.90 GHz)

SPEChpc 2021_tny_base = 13.7

SPEChpc 2021_tny_peak = 13.7

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	MPI	240	1	124	18.1	123	18.3	**123**	**18.2**		MPI	240	1	124	18.1	123	18.3	**123**	**18.2**	
513.soma_t	MPI	240	1	260	14.2	254	14.6	**256**	**14.4**		MPI	240	1	260	14.2	254	14.6	**256**	**14.4**	
518.tealeaf_t	MPI	240	1	178	9.27	179	9.22	**178**	**9.26**		MPI	240	1	178	9.27	179	9.22	**178**	**9.26**	
519.clvleaf_t	MPI	240	1	193	8.57	**193**	**8.55**	193	8.55		MPI	240	1	193	8.57	**193**	**8.55**	193	8.55	
521.miniswp_t	MPI	240	1	**167**	**9.58**	172	9.28	167	9.60		MPI	240	1	**167**	**9.58**	172	9.28	167	9.60	
528.pot3d_t	MPI	240	1	253	8.39	**252**	**8.44**	251	8.45		MPI	240	1	253	8.39	**252**	**8.44**	251	8.45	
532.sph_exa_t	MPI	240	1	89.6	21.8	89.9	21.7	**89.9**	**21.7**		MPI	240	1	89.6	21.8	89.9	21.7	**89.9**	**21.7**	
534.hpgmgfv_t	MPI	240	1	**127**	**9.27**	127	9.26	127	9.27		MPI	240	1	**127**	**9.27**	127	9.26	127	9.27	
535.weather_t	MPI	240	1	62.3	51.7	71.1	45.4	**64.0**	**50.4**		MPI	240	1	62.3	51.7	71.1	45.4	**64.0**	**50.4**	

SPEChpc 2021_tny_base = **13.7**

SPEChpc 2021_tny_peak = **13.7**

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:	1

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:	MPI
Base Ranks Run:	240
Base Threads Run:	1
Peak Parallel Models:	MPI
Minimum Peak Ranks:	240
Maximum Peak Ranks:	240
Max. Peak Threads:	1
Min. Peak Threads:	1

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) 528.pot3d_t(base) 535.weather_t(base)
------------------------------------------------------------------------------
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) 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 2022.2.0 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)
------------------------------------------------------------------------------
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++`
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 -ansi-alias`

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

Fortran benchmarks:
`-Ofast -mprefer-vector-width=512 -xCORE-AVX512 -ipo`
`-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 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`

Fortran benchmarks:

519.clvleaf_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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