SPEChpc™ 2021 Tiny Result

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Cisco Systems

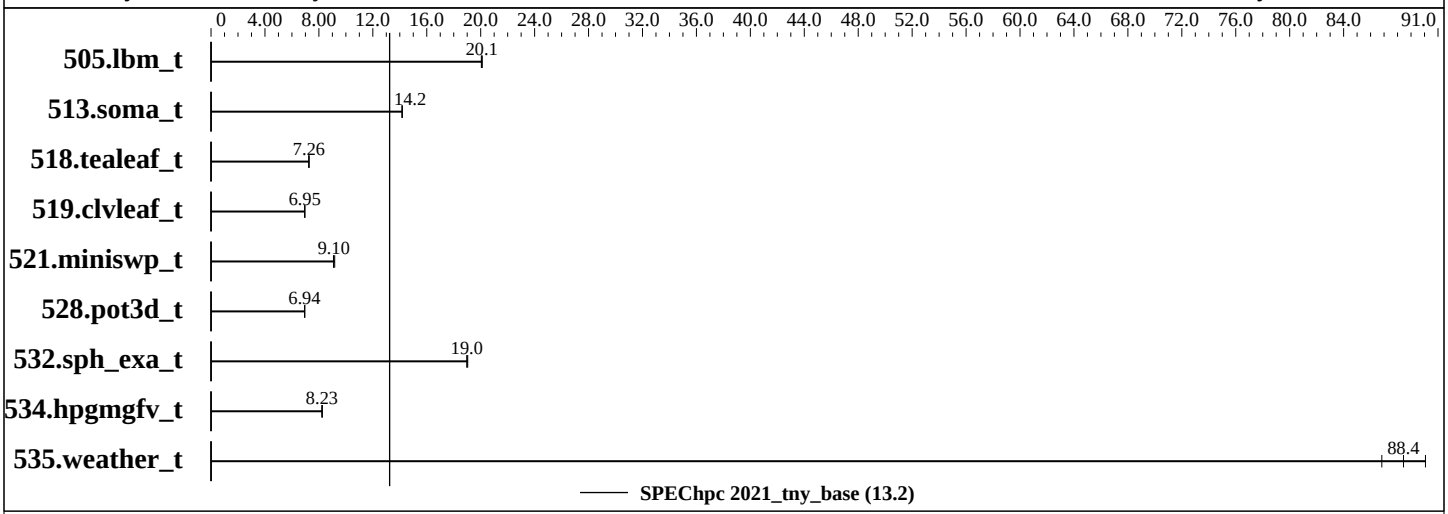
Cisco UCS C245 M8 (AMD EPYC 9754)

SPEChpc 2021_tny_base = 13.2

SPEChpc 2021_tny_peak = Not Run

hpc2021 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: May-2024
Hardware Availability: Jun-2024
Software Availability: Feb-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
505.lbm_t	MPI	256	1	112	20.1	112	20.0	**112**	**20.1**									
513.soma_t	MPI	256	1	261	14.2	261	14.2	**261**	**14.2**									
518.tealeaf_t	MPI	256	1	227	7.27	**227**	**7.26**	228	7.25									
519.clvleaf_t	MPI	256	1	238	6.95	237	6.95	**237**	**6.95**									
521.miniswp_t	MPI	256	1	176	9.08	**176**	**9.10**	174	9.17									
528.pot3d_t	MPI	256	1	306	6.95	**306**	**6.94**	306	6.94									
532.sph_exa_t	MPI	256	1	103	19.0	102	19.0	**103**	**19.0**									
534.hpgmgfv_t	MPI	256	1	142	8.25	143	8.23	**143**	**8.23**									
535.weather_t	MPI	256	1	37.1	86.8	35.8	90.1	**36.5**	**88.4**									

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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:	Cisco UCS C245 M8
Compute Nodes Used:	1
Total Chips:	2
Total Cores:	256
Total Threads:	512
Total Memory:	1536 GB
Max. Peak Threads:	--

Software Summary

Compiler:	Intel oneAPI DPC++/C++ Compiler 2024.0.2
MPI Library:	Intel MPI Library for Linux OS, Build 20231005
Other MPI Info:	None
Other Software:	None
Base Parallel Model:	MPI
Base Ranks Run:	256
Base Threads Run:	1
Peak Parallel Models:	Not Run
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--
Max. Peak Threads:	--
Min. Peak Threads:	--

Node Description: Cisco UCS C245 M8

Hardware

Number of nodes:	1
Uses of the node:	compute
Vendor:	Cisco Systems
Model:	Cisco UCS C245 M8
CPU Name:	AMD EPYC 9754
CPU(s) orderable:	1,2 chips
Chips enabled:	2
Cores enabled:	256
Cores per chip:	128
Threads per core:	2
CPU Characteristics:	Max. Boost Clock upto 3.1GHz
CPU MHz:	2250
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	256 MB I+D on chip per chip 16 MB shared / 8 cores
Other Cache:	None
Memory:	1536 GB (24 x 64 GB 2Rx4 PC5-5600B-R, running at 4800 MHz)
Disk Subsystem:	1 x 960 GB 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:	SUSE Linux Enterprise Server 15 SP5 Kernel 5.14.21-150500.53-default
Local File System:	xfs
Shared File System:	None
System State:	Multi-user, run level 3
Other Software:	None

Node Description: Cisco UCS C245 M8

Hardware (Continued)

Ports Used: 0
Interconnect Type: None

Submit Notes

```
The config file option 'submit' was used.
mpirun --bind-to core:overload-allowed --oversubscribe --mca topo basic -np $ranks $command
```

General Notes

```
 MPI startup command:
   mpirun command was used to start MPI jobs.
```

Compiler Version Notes

```
==============================================================================
 CXXC 532.sph_exa_t(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler 2024.0.2 (2024.0.2.20231213)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /home/intel_tools/compiler/compiler/2024.0/bin/compiler
Configuration file:
  /home/intel_tools/compiler/compiler/2024.0/bin/compiler/../icpx.cfg
------------------------------------------------------------------------------

==============================================================================
 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 2024.0.2 (2024.0.2.20231213)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /home/intel_tools/compiler/compiler/2024.0/bin/compiler
Configuration file:
  /home/intel_tools/compiler/compiler/2024.0/bin/compiler/../icx.cfg
------------------------------------------------------------------------------

==============================================================================
 FC  519.clvleaf_t(base) 535.weather_t(base)
------------------------------------------------------------------------------
ifx (IFX) 2024.0.2 20231213
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
```

(Continued on next page)

Compiler Version Notes (Continued)

```
------------------------------------------------------------------------------

==============================================================================
 FC  528.pot3d_t(base)
------------------------------------------------------------------------------
ifx: command line warning #10157: ignoring option '-W'; argument is of wrong
  type
ifx (IFX) 2024.0.2 20231213
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`mpiicc -cc=icx`

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

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 -ipo -mprefer-vector-width=512 -march=common-avx512`
`-ansi-alias`

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Base Optimization Flags (Continued)

C++ benchmarks:
`-Ofast -ipo -mprefer-vector-width=512 -march=common-avx512 -ansi-alias`

Fortran benchmarks:
`-Ofast -ipo -mprefer-vector-width=512 -march=common-avx512 -nostandard-realloc-lhs -align array64byte`

Base Other Flags

Fortran benchmarks:

528.pot3d_t: `-Wno-incompatible-function-pointer-types`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/hpc2021/flags/Intel_compiler_flags_hpc.2024.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/hpc2021/flags/Intel_compiler_flags_hpc.2024.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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