SPEChpc™ 2021 Small Result

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Cisco Systems

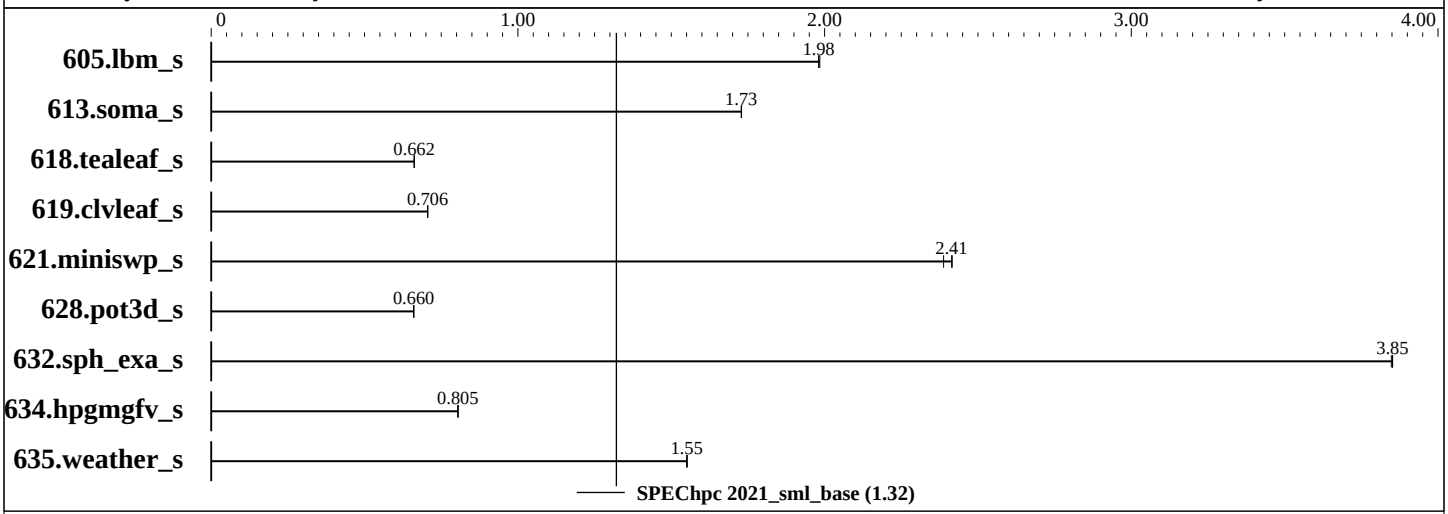
Cisco UCS C245 M8 (AMD EPYC 9754)

SPEChpc 2021_sml_base = 1.32

SPEChpc 2021_sml_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
605.lbm_s	MPI	256	1	**782**	**1.98**	783	1.98	781	1.98									
613.soma_s	MPI	256	1	925	1.73	**926**	**1.73**	926	1.73									
618.tealeaf_s	MPI	256	1	3097	0.662	3096	0.662	**3096**	**0.662**									
619.clvleaf_s	MPI	256	1	2337	0.706	2338	0.706	**2338**	**0.706**									
621.miniswp_s	MPI	256	1	**456**	**2.41**	455	2.42	461	2.39									
628.pot3d_s	MPI	256	1	2537	0.660	2535	0.661	**2537**	**0.660**									
632.sph_exa_s	MPI	256	1	597	3.85	598	3.85	**597**	**3.85**									
634.hpgmgfv_s	MPI	256	1	1212	0.804	**1212**	**0.805**	1212	0.805									
635.weather_s	MPI	256	1	1675	1.55	1677	1.55	**1677**	**1.55**									

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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: Feb-2024

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

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

(Continued on next page)

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 632.sph_exa_s(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  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 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  619.clvleaf_s(base) 635.weather_s(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  628.pot3d_s(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

605.lbm_s: `-lstdc++`
613.soma_s: `-lstdc++`
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 -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:

628.pot3d_s: `-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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