SPEChpc™ 2021 Small Result

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Cisco Systems

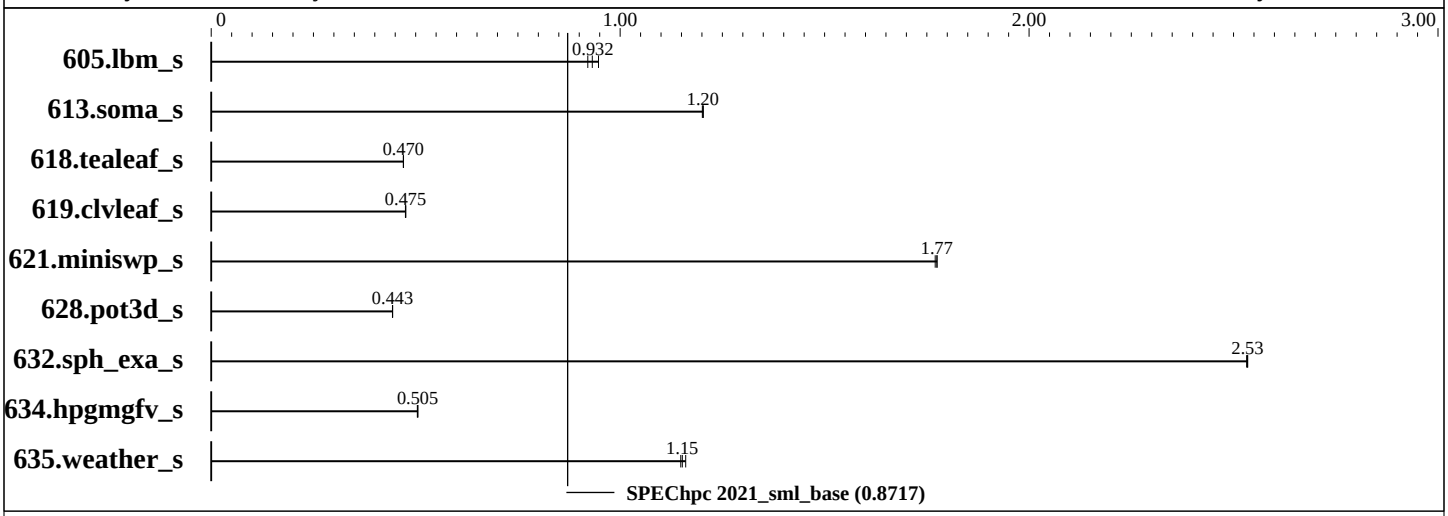
Cisco UCS X210c M7 (Intel Xeon Platinum 8490H)

SPEChpc 2021_sml_base = 0.8717

SPEChpc 2021_sml_peak = Not Run

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

Test Date: Dec-2022
Hardware Availability: Mar-2023
Software Availability: Nov-2022



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	120	1	1637	0.947	**1663**	**0.932**	1683	0.921									
613.soma_s	MPI	120	1	1330	1.20	**1331**	**1.20**	1332	1.20									
618.tealeaf_s	MPI	120	1	4362	0.470	4359	0.470	**4362**	**0.470**									
619.clvleaf_s	MPI	120	1	3474	0.475	3467	0.476	**3471**	**0.475**									
621.miniswp_s	MPI	120	1	620	1.77	**620**	**1.77**	621	1.77									
628.pot3d_s	MPI	120	1	**3777**	**0.443**	3779	0.443	3776	0.444									
632.sph_exa_s	MPI	120	1	907	2.53	**908**	**2.53**	908	2.53									
634.hpgmgfv_s	MPI	120	1	1934	0.504	1929	0.505	**1931**	**0.505**									
635.weather_s	MPI	120	1	**2257**	**1.15**	2241	1.16	2264	1.15									

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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 X210c M7
Interconnect:	N/A
Compute Nodes Used:	1
Total Chips:	2
Total Cores:	120
Total Threads:	240
Total Memory:	1 TB
Max. Peak Threads:	--

Software Summary

Compiler:	Intel oneAPI Compiler 2022.2.1
MPI Library:	Intel MPI Library for Linux* OS, Version 2022.2.1 Build 20221020
Other MPI Info:	--
Other Software:	--
Base Parallel Model:	MPI
Base Ranks Run:	120
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 X210c M7

Hardware

Number of nodes:	1
Uses of the node:	Compute
Vendor:	Cisco Systems
Model:	Cisco UCS X210c M7
CPU Name:	Intel Xeon Platinum 8490H
CPU(s) orderable:	1, 2 chips
Chips enabled:	2
Cores enabled:	120
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 + 48 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:	1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)
Disk Subsystem:	1 x 960 GB M.2 SSD SATA
Other Hardware:	None
Accel Count:	--
Accel Model:	--
Accel Vendor:	--
Accel Type:	--
Accel Connection:	--
Accel ECC enabled:	--
Accel Description:	--
Adapter:	None
Number of Adapters:	0
Slot Type:	None
Data Rate:	None
Ports Used:	0

(Continued on next page)

Software

Accelerator Driver:	--
Adapter:	None
Adapter Driver:	None
Adapter Firmware:	None
Operating System:	SUSE Linux Enterprise Server 15 SP4 , 5.14.21-150400.22-default
Local File System:	xfs
Shared File System:	None
System State:	Multi-user, run level 3
Other Software:	None

Node Description: Cisco UCS X210c M7

Hardware (Continued)

Interconnect Type: None

Interconnect Description: N/A

Hardware

Vendor:	N/A
Model:	N/A
Switch Model:	None
Number of Switches:	0
Number of Ports:	0
Data Rate:	N/A
Firmware:	N/A
Topology:	N/A
Primary Use:	N/A

Software

: --

Submit Notes

```
The config file option 'submit' was used.
export LD_PRELOAD="/usr/lib64/libhugetlbfs.so $LD_PRELOAD"
export OMP_PROC_BIND=true
mpiexec.hydra -bootstrap ssh -hostfile /home/hpc2021/1node --bind-to core -np $ranks -ppn $ppn -genv OMP_NUM_THREADS=$threads $command
```

Compiler Version Notes

```
==============================================================================
 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 2022.2.1 (2022.2.1.20221020)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /home/tools-intel/compiler/compiler/2022.2.1/linux/bin-llvm
Configuration file:
  /home/tools-intel/compiler/compiler/2022.2.1/linux/bin/icx.cfg
------------------------------------------------------------------------------

==============================================================================
 CXXC 632.sph_exa_s(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler 2022.2.1 (2022.2.1.20221020)
Target: x86_64-unknown-linux-gnu
Thread model: posix
```

(Continued on next page)

Compiler Version Notes (Continued)

```
InstalledDir: /home/tools-intel/compiler/compiler/2022.2.1/linux/bin-llvm
Configuration file:
  /home/tools-intel/compiler/compiler/2022.2.1/linux/bin/icx.cfg
------------------------------------------------------------------------------

==============================================================================
 FC  619.clvleaf_s(base) 628.pot3d_s(base) 635.weather_s(base)
------------------------------------------------------------------------------
ifx (IFORT) 2022.2.1 20221020
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`mpiicc -cc=icx -lstdc++(*)`

C++ benchmarks:
`mpiicpc -cxx=icx -lstdc++(*)`

Fortran benchmarks:
`mpiifort -fc=ifx -lstdc++(*)`

(*) Indicates a compiler flag that was found in a non-compiler variable.

Base Optimization Flags

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

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

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

Base Other Flags

C benchmarks:
`-Ispecmpitime`

C++ benchmarks:
`-Ispecmpitime`

Fortran benchmarks:

619.clvleaf_s: `-Ispecmpitime`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/hpc2021/flags/Intel-oneAPI-icx2021-official-linux64.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/hpc2021/flags/Intel-oneAPI-icx2021-official-linux64.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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