



# SPEChpc™ 2021 Small Result

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## Cisco Systems

SPEChpc 2021\_sml\_base = 1.00

Cisco UCS X210c M7 (Intel Xeon Platinum 8490H)

SPEChpc 2021\_sml\_peak = Not Run

hpc2021 License: 9019

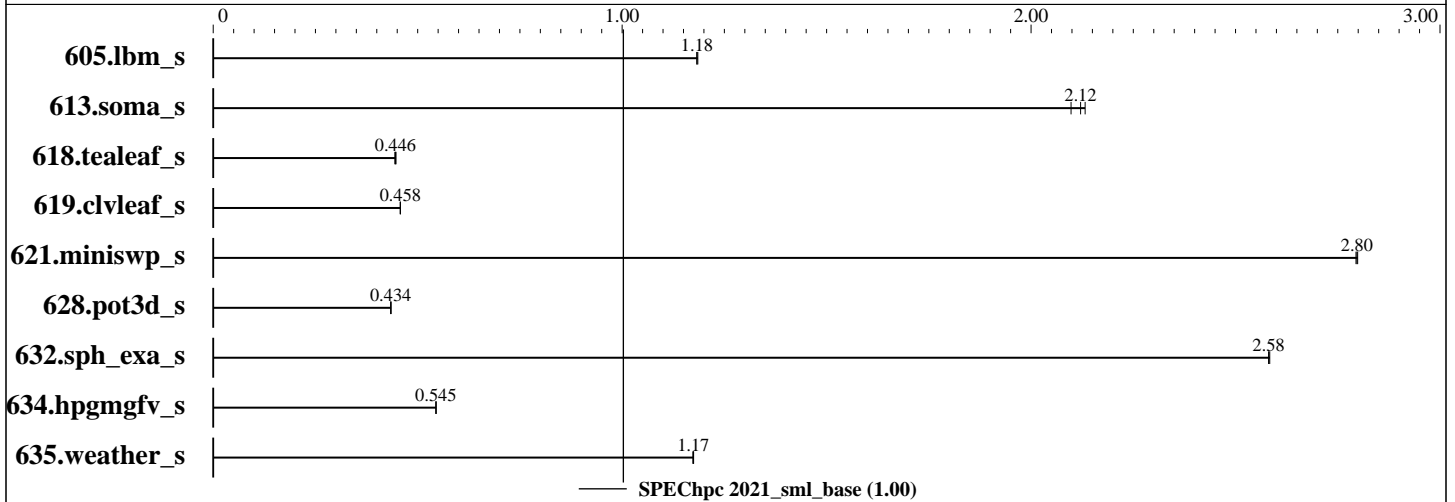
Test Date: Dec-2022

Test Sponsor: Cisco Systems

Hardware Availability: Mar-2023

Tested by: Cisco Systems

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	OMP	8	30	1308	1.19	1311	1.18	<b>1310</b>	<b>1.18</b>										
613.soma_s	OMP	8	30	<b>754</b>	<b>2.12</b>	750	2.13	763	2.10										
618.tealeaf_s	OMP	8	30	4616	0.444	<b>4599</b>	<b>0.446</b>	4586	0.447										
619.clvleaf_s	OMP	8	30	<b>3605</b>	<b>0.458</b>	3607	0.457	3604	0.458										
621.miniswp_s	OMP	8	30	<b>393</b>	<b>2.80</b>	393	2.80	394	2.79										
628.pot3d_s	OMP	8	30	3852	0.435	3858	0.434	<b>3857</b>	<b>0.434</b>										
632.sph_exa_s	OMP	8	30	891	2.58	<b>891</b>	<b>2.58</b>	890	2.58										
634.hpgmgfv_s	OMP	8	30	<b>1790</b>	<b>0.545</b>	1789	0.545	1790	0.545										
635.weather_s	OMP	8	30	<b>2214</b>	<b>1.17</b>	2213	1.17	2217	1.17										

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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 2022.2.0  
MPI Library: Intel MPI Library for Linux\* OS, Version 2022.2.0 Build 20220730  
Other MPI Info: --  
Other Software: --  
Base Parallel Model: OMP  
Base Ranks Run: 8  
Base Threads Run: 30  
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

### 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

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### 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/lnode --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 2022.2.0 (2022.2.0.20220730)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /home/tools-intel/compiler/compiler/2022.2.0/linux/bin-llvm  
Configuration file:  
/home/tools-intel/compiler/compiler/2022.2.0/linux/bin/icx.cfg  
=====

=====  
CXXC 632.sph\_exa\_s(base)  
=====

Intel(R) oneAPI DPC++/C++ Compiler 2022.2.0 (2022.2.0.20220730)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix

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### Compiler Version Notes (Continued)

InstalledDir: /home/tools-intel/compiler/compiler/2022.2.0/linux/bin-llvm  
Configuration file:  
/home/tools-intel/compiler/compiler/2022.2.0/linux/bin/icx.cfg

-----  
=====

```
FC 619.clvleaf_s(base) 628.pot3d_s(base) 635.weather_s(base)
```

-----  
=====

```
ifx (IFORT) 2022.2.0 20220730  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
```

### Base Compiler Invocation

C benchmarks:

```
mpiicc -cc=icx -lstdc++(*)
```

C++ benchmarks:

```
mpicpc -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
```



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## 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](mailto:info@spec.org).

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