



# SPEChpc™ 2021 Small Result

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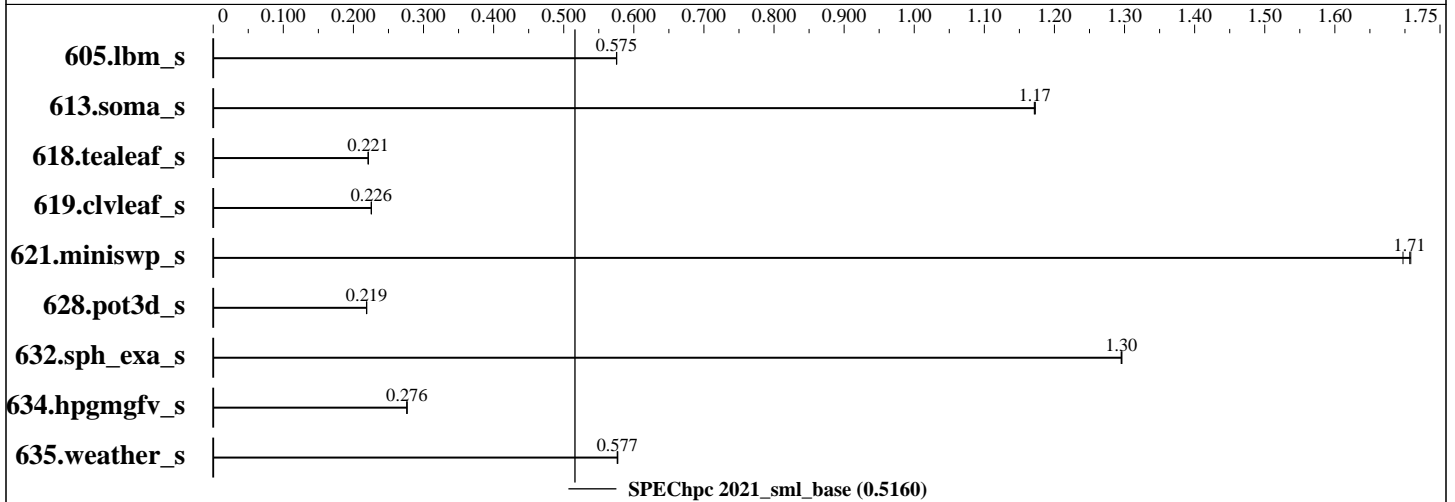
**Supermicro**  
SuperServer SYS-521E-WR (Intel Xeon Platinum 8490H)

SPEChpc 2021\_sml\_base = 0.5160

SPEChpc 2021\_sml\_peak = Not Run

**hpc2021 License:** 6569  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Feb-2023  
**Hardware Availability:** Jan-2023  
**Software Availability:** Jan-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 |
| 605.lbm_s     | OMP   | 4     | 30        | <b>2694</b> | <b>0.575</b> | 2693        | 0.576        | 2695        | 0.575        |       |       |           |         |       |         |       |         |       |
| 613.soma_s    | OMP   | 4     | 30        | 1364        | 1.17         | <b>1365</b> | <b>1.17</b>  | 1366        | 1.17         |       |       |           |         |       |         |       |         |       |
| 618.tealeaf_s | OMP   | 4     | 30        | 9274        | 0.221        | 9266        | 0.221        | <b>9269</b> | <b>0.221</b> |       |       |           |         |       |         |       |         |       |
| 619.clvleaf_s | OMP   | 4     | 30        | 7316        | 0.226        | 7312        | 0.226        | <b>7314</b> | <b>0.226</b> |       |       |           |         |       |         |       |         |       |
| 621.miniswp_s | OMP   | 4     | 30        | 644         | 1.71         | <b>644</b>  | <b>1.71</b>  | 648         | 1.70         |       |       |           |         |       |         |       |         |       |
| 628.pot3d_s   | OMP   | 4     | 30        | 7662        | 0.219        | <b>7653</b> | <b>0.219</b> | 7650        | 0.219        |       |       |           |         |       |         |       |         |       |
| 632.sph_exa_s | OMP   | 4     | 30        | 1776        | 1.30         | <b>1775</b> | <b>1.30</b>  | 1774        | 1.30         |       |       |           |         |       |         |       |         |       |
| 634.hpgmgfv_s | OMP   | 4     | 30        | 3526        | 0.277        | 3529        | 0.276        | <b>3529</b> | <b>0.276</b> |       |       |           |         |       |         |       |         |       |
| 635.weather_s | OMP   | 4     | 30        | 4511        | 0.576        | <b>4509</b> | <b>0.577</b> | 4505        | 0.577        |       |       |           |         |       |         |       |         |       |

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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: SuperServer SYS-521E-WR  
Interconnect: None  
Compute Nodes Used: 1  
Total Chips: 1  
Total Cores: 60  
Total Threads: 120  
Total Memory: 512 GB  
Max. Peak Threads: --

### Software Summary

Compiler: C/C++/Fortran: Version 2023.0.0 of Intel oneAPI Compiler  
MPI Library: Intel MPI Library for Linux\* OS, Version 2021.8.0 Build 20221129  
Other MPI Info: None  
Other Software: None  
Base Parallel Model: OMP  
Base Ranks Run: 4  
Base Threads Run: 30  
Peak Parallel Models: Not Run  
Minimum Peak Ranks: --  
Maximum Peak Ranks: --  
Max. Peak Threads: --  
Min. Peak Threads: --

## Node Description: SuperServer SYS-521E-WR

### Hardware

Number of nodes: 1  
Uses of the node: compute  
Vendor: Supermicro  
Model: SuperServer SYS-521E-WR  
CPU Name: Intel Xeon Platinum 8490H  
CPU(s) orderable: 1 chip  
Chips enabled: 1  
Cores enabled: 60  
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: 512 GB (8 x 64 GB 2Rx4 PC5-4800B-R)  
Disk Subsystem: 1 x 240 GB Micron SATA III 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 SP4 Kernel 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: SuperServer SYS-521E-WR

#### Hardware (Continued)

Ports Used: 0  
Interconnect Type: None

### Interconnect Description: None

#### Hardware

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

#### Software

: --

### Submit Notes

The config file option 'submit' was used.

### General Notes

MPI startup command:  
mpirun command (mpiexec.hydra) was used to start MPI jobs.

### Compiler Version Notes

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

Intel(R) oneAPI DPC++/C++ Compiler 2023.0.0 (2023.0.0.20221201)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/intel/oneapi/compiler/2023.0.0/linux/bin-llvm  
Configuration file:  
/opt/intel/oneapi/compiler/2023.0.0/linux/bin-llvm/./bin/icpx.cfg  
-----

=====  
CC 605.lbm\_s(base) 613.soma\_s(base) 618.tealeaf\_s(base) 621.miniswp\_s(base)  
634.hpgmgfv\_s(base)  
-----

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### Compiler Version Notes (Continued)

```
Intel(R) oneAPI DPC++/C++ Compiler 2023.0.0 (2023.0.0.20221201)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/intel/oneapi/compiler/2023.0.0/linux/bin-llvm
Configuration file:
/opt/intel/oneapi/compiler/2023.0.0/linux/bin-llvm/./bin/icx.cfg
```

```
=====
FC 619.clvleaf_s(base) 635.weather_s(base)
-----
```

```
ifx (IFORT) 2023.0.0 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
-----
```

```
=====
FC 628.pot3d_s(base)
-----
```

```
ifx: command line warning #10157: ignoring option '-W'; argument is of wrong
type
ifx (IFORT) 2023.0.0 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
-----
```

### Base Compiler Invocation

C benchmarks:  
mpiicc -cc=icx

C++ benchmarks:  
mpicpc -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++
```

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## Base Portability Flags (Continued)

632.sph\_exa\_s: -lstdc++  
634.hpgmgfv\_s: -lstdc++  
635.weather\_s: -lstdc++

## 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  
-nonstandard-realloc-lhs -align array64byte

## Base Other Flags

C benchmarks:

-Ispecmpitime

C++ benchmarks:

-Ispecmpitime

Fortran benchmarks:

619.clvleaf\_s: -Ispecmpitime

628.pot3d\_s: -Wno-incompatible-function-pointer-types

635.weather\_s: No flags used

The flags file that was used to format this result can be browsed at

[http://www.spec.org/hpc2021/flags/Intel\\_compiler\\_flags.2023-02-09.html](http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2023-02-09.html)

You can also download the XML flags source by saving the following link:

[http://www.spec.org/hpc2021/flags/Intel\\_compiler\\_flags.2023-02-09.xml](http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2023-02-09.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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