



# SPEChpc™ 2021 Small Result

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## Supermicro

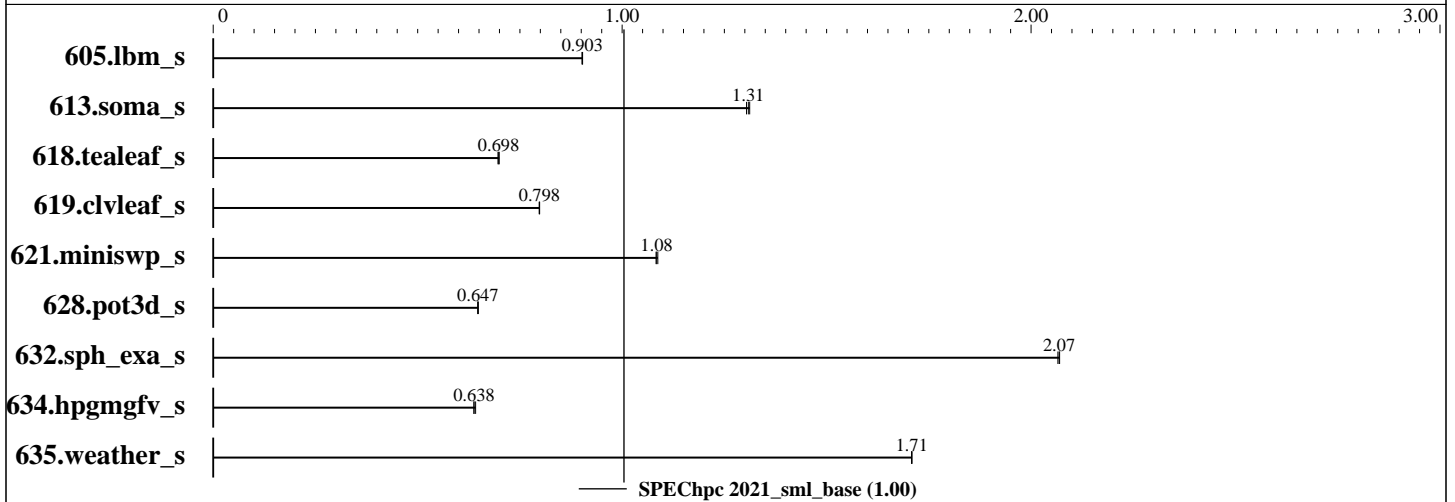
SuperServer SYS-F511E2-RT (Intel Xeon Gold 5433N)

SPEChpc 2021\_sml\_base = 1.00

SPEChpc 2021\_sml\_peak = Not Run

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

Test Date: Apr-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	MPI	160	1	1718	0.902	1716	0.903	<b><u>1717</u></b>	<b><u>0.903</u></b>										
613.soma_s	MPI	160	1	<b><u>1223</u></b>	<b><u>1.31</u></b>	1227	1.30	1220	1.31										
618.tealeaf_s	MPI	160	1	2944	0.696	2931	0.699	<b><u>2937</u></b>	<b><u>0.698</u></b>										
619.clvleaf_s	MPI	160	1	<b><u>2068</u></b>	<b><u>0.798</u></b>	2070	0.797	2067	0.798										
621.miniswp_s	MPI	160	1	1012	1.09	<b><u>1014</u></b>	<b><u>1.08</u></b>	1016	1.08										
628.pot3d_s	MPI	160	1	2589	0.647	2584	0.648	<b><u>2587</u></b>	<b><u>0.647</u></b>										
632.sph_exa_s	MPI	160	1	1113	2.07	<b><u>1112</u></b>	<b><u>2.07</u></b>	1111	2.07										
634.hpgmgfv_s	MPI	160	1	1530	0.637	1519	0.642	<b><u>1528</u></b>	<b><u>0.638</u></b>										
635.weather_s	MPI	160	1	1523	1.71	<b><u>1522</u></b>	<b><u>1.71</u></b>	1522	1.71										

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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-F511E2-RT  
Interconnect: Supermicro AOC-ATG-i2TM  
Compute Nodes Used: 4  
Total Chips: 4  
Total Cores: 80  
Total Threads: 160  
Total Memory: 2 TB  
Max. Peak Threads: --

### Software Summary

Compiler: C/C++/Fortran: Version 2023.0.0 of Intel oneAPI Compiler  
MPI Library: Version 2021.8.0 Build 20221129  
Other MPI Info: None  
Other Software: None  
Base Parallel Model: MPI  
Base Ranks Run: 160  
Base Threads Run: 1  
Peak Parallel Models: Not Run  
Minimum Peak Ranks: --  
Maximum Peak Ranks: --  
Max. Peak Threads: --  
Min. Peak Threads: --

## Node Description: SuperServer SYS-F511E2-RT

### Hardware

Number of nodes: 4  
Uses of the node: compute  
Vendor: Supermicro  
Model: SuperServer SYS-F511E2-RT  
CPU Name: Intel Xeon Gold 5433N  
CPU(s) orderable: 1 chip  
Chips enabled: 1  
Cores enabled: 20  
Cores per chip: 20  
Threads per core: 2  
CPU Characteristics: Intel Turbo Boost Technology up to 4.1 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: 37.5 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 480 GB Micron M.2 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: Supermicro AOC-ATG-i2TM  
Number of Adapters: 1  
Slot Type: Advanced I/O Module (AIOM) Form Factor  
Data Rate: 10 Gb/s  
Ports Used: 1

### Software

Accelerator Driver: --  
Adapter: Supermicro AOC-ATG-i2TM  
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-F511E2-RT

#### Hardware (Continued)

Interconnect Type: AOC-ATG-i2TM

### Interconnect Description: Supermicro AOC-ATG-i2TM

#### Hardware

Vendor: None  
Model: Supermicro AOC-ATG-i2TM  
Switch Model: None  
Number of Switches: 1  
Number of Ports: 0  
Data Rate: 10 Gb/s  
Firmware: None  
Topology: None  
Primary Use: MPI Traffic, NFS Access

#### Software

: --

### Submit Notes

The config file option 'submit' was used.

```
mpirun.hydra -bootstrap ssh -hostfile ${top}/hostfile -genv OMP_NUM_THREADS $threads -np $ranks -ppn $ppn $command
```

### General Notes

MPI startup command:

mpirun command (mpirun.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: -DSPEC_NO_REORDER -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 -ansi-alias

C++ benchmarks:

-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -ansi-alias

Fortran benchmarks:

619.clvleaf\_s: -Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512  
-nostandard-realloc-lhs -align array64byte

628.pot3d\_s: -Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512  
-nostandard-realloc-lhs -align array64byte  
-heap-arrays 32768

635.weather\_s: Same as 619.clvleaf\_s

## 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



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The flags file that was used to format this result can be browsed at  
[http://www.spec.org/hpc2021/flags/Intel\\_compiler\\_flags.2023-06-05.html](http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2023-06-05.html)

You can also download the XML flags source by saving the following link:  
[http://www.spec.org/hpc2021/flags/Intel\\_compiler\\_flags.2023-06-05.xml](http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2023-06-05.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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