SPEChpc™ 2021 Small Result

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Supermicro

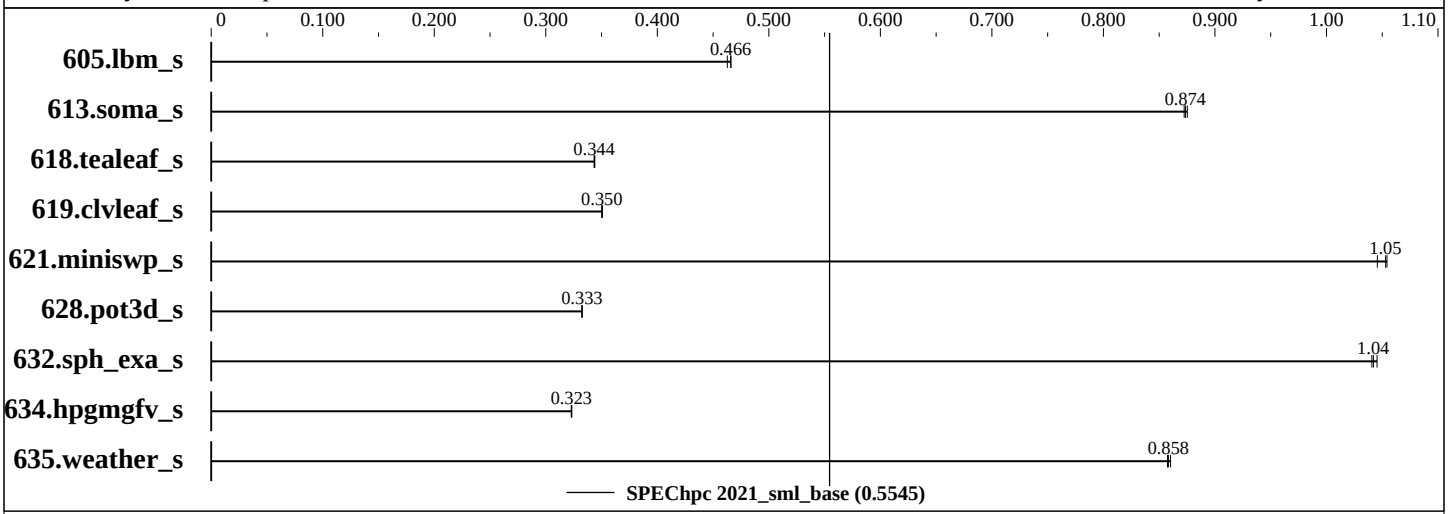
SuperServer SYS-F511E2-RT (Intel Xeon Gold 5433N)

SPEChpc 2021_sml_base = 0.5545

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	OMP	4	20	3326	0.466	**3327**	**0.466**	3349	0.463									
613.soma_s	OMP	4	20	1828	0.875	**1832**	**0.874**	1834	0.872									
618.tealeaf_s	OMP	4	20	**5968**	**0.344**	5970	0.343	5960	0.344									
619.clvleaf_s	OMP	4	20	4705	0.351	**4710**	**0.350**	4711	0.350									
621.miniswp_s	OMP	4	20	1043	1.05	**1045**	**1.05**	1052	1.05									
628.pot3d_s	OMP	4	20	5039	0.332	**5037**	**0.333**	5037	0.333									
632.sph_exa_s	OMP	4	20	2210	1.04	**2207**	**1.04**	2200	1.05									
634.hpgmgfv_s	OMP	4	20	**3018**	**0.323**	3020	0.323	3015	0.323									
635.weather_s	OMP	4	20	**3029**	**0.858**	3032	0.857	3023	0.860									

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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:	OMP
Base Ranks Run:	4
Base Threads Run:	20
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

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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

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.
mpiexec.hydra -bootstrap ssh -hostfile $[top]/hostfile -genv OMP_NUM_THREADS $threads -np $ranks -ppn $ppn $command
```

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:
`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: `-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 -fiopenmp -ansi-alias`

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

Fortran benchmarks:

619.clvleaf_s: `-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp -nostandard-realloc-lhs -align array64byte`

628.pot3d_s: `-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp -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`

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

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

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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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