SPEChpc™ 2021 Tiny Result

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Supermicro

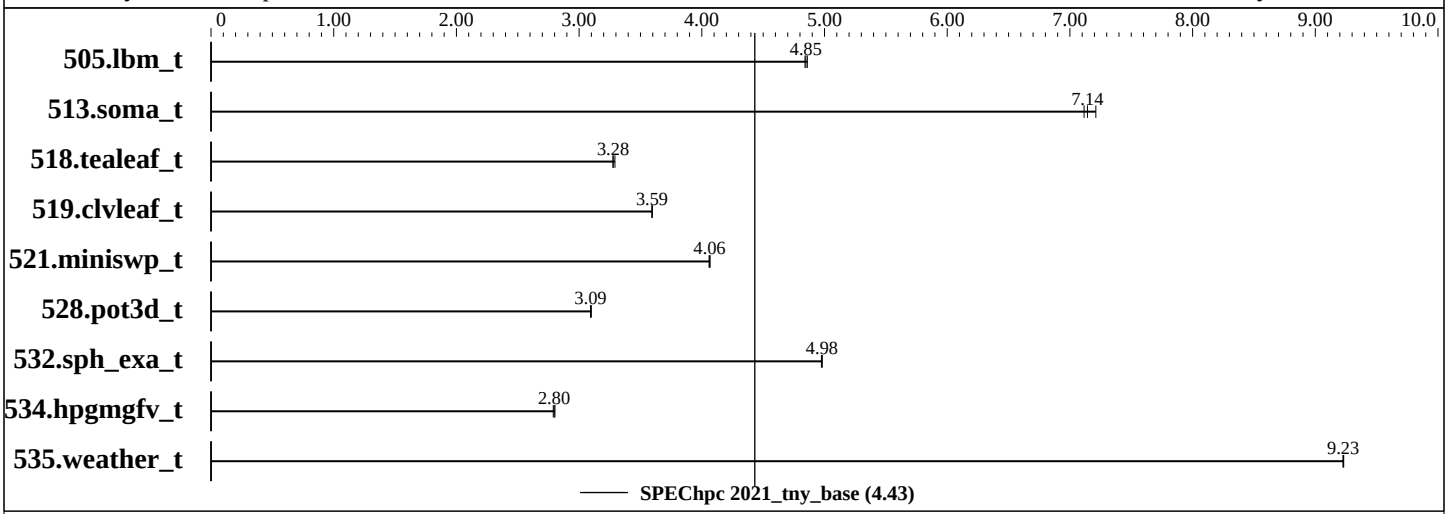
SuperServer SYS-F511E2-RT (Intel Xeon Gold 5433N)

SPEChpc 2021_tny_base = 4.43

SPEChpc 2021_tny_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
505.lbm_t	OMP	4	20	463	4.86	465	4.84	**464**	**4.85**									
513.soma_t	OMP	4	20	520	7.12	513	7.21	**518**	**7.14**									
518.tealeaf_t	OMP	4	20	501	3.29	504	3.28	**503**	**3.28**									
519.clvleaf_t	OMP	4	20	**459**	**3.59**	459	3.60	459	3.59									
521.miniswp_t	OMP	4	20	**394**	**4.06**	394	4.06	393	4.07									
528.pot3d_t	OMP	4	20	**687**	**3.09**	686	3.10	687	3.09									
532.sph_exa_t	OMP	4	20	392	4.97	**392**	**4.98**	392	4.98									
534.hpgmgfv_t	OMP	4	20	421	2.79	**420**	**2.80**	419	2.80									
535.weather_t	OMP	4	20	349	9.23	350	9.23	**349**	**9.23**									

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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 532.sph_exa_t(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  505.lbm_t(base) 513.soma_t(base) 518.tealeaf_t(base) 521.miniswp_t(base)
      534.hpgmgfv_t(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  519.clvleaf_t(base) 535.weather_t(base)
------------------------------------------------------------------------------
ifx (IFORT) 2023.0.0 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
 FC  528.pot3d_t(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

505.lbm_t: `-lstdc++`
513.soma_t: `-lstdc++ -DSPEC_NO_VAR_ARRAY_REDUCE`
518.tealeaf_t: `-lstdc++`
519.clvleaf_t: `-lstdc++`
521.miniswp_t: `-lstdc++`
528.pot3d_t: `-DSPEC_NO_REORDER -lstdc++`

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Base Portability Flags (Continued)

532.sph_exa_t: `-lstdc++`
534.hpgmgfv_t: `-lstdc++`
535.weather_t: `-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:

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

528.pot3d_t: `-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp -nostandard-realloc-lhs -align array64byte -heap-arrays 32768`

535.weather_t: `Same as 519.clvleaf_t`

Base Other Flags

C benchmarks (except as noted below):
`-Ispecmpitime`

521.miniswp_t: `-Ispecmpitime/`

534.hpgmgfv_t: `-Ispecmpitime`

C++ benchmarks:
`-Ispecmpitime`

Fortran benchmarks:

519.clvleaf_t: `-Ispecmpitime`

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Base Other Flags (Continued)

528.pot3d_t: `-Wno-incompatible-function-pointer-types`

535.weather_t: `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.

Tested with SPEChpc2021 v1.1.7 on 2023-04-26 12:54:55-0400.
Report generated on 2023-06-05 11:41:52 by hpc2021 PS formatter v1.0.3.
Originally published on 2023-06-05.