SPEChpc™ 2021 Tiny Result

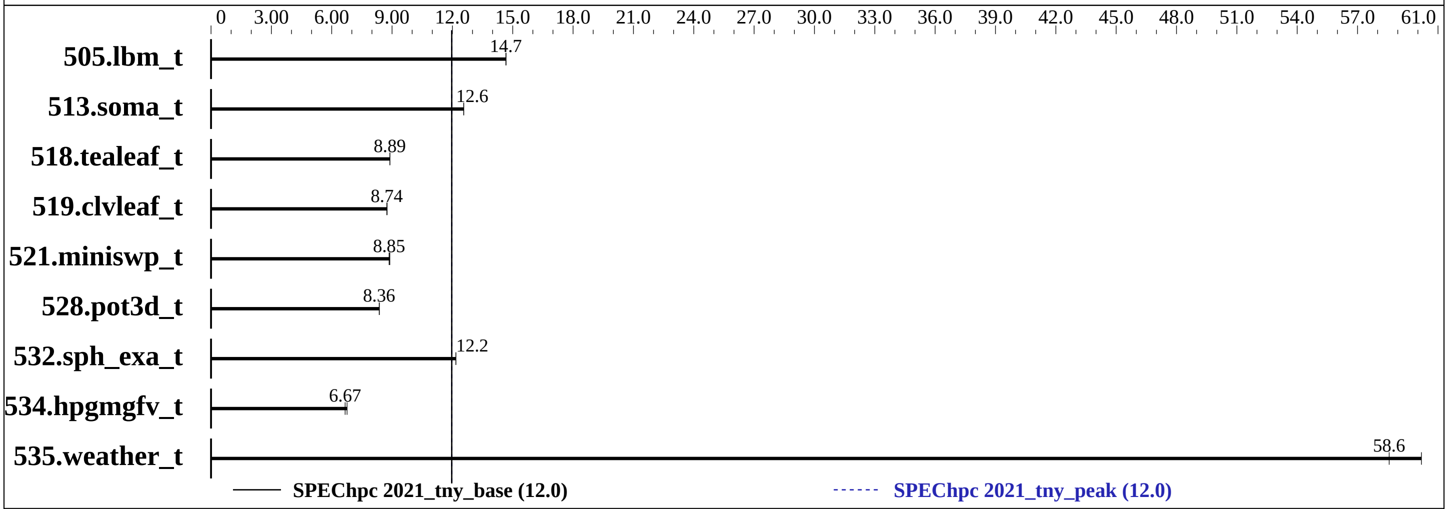
Supermicro

Hyper A+ Server AS -2126HS-TN (AMD EPYC 9355)

SPEChpc 2021_tny_base = 12.0

SPEChpc 2021_tny_peak = 12.0

hpc2021 License:	6569	**Test Date:**	Sep-2024
Test Sponsor:	Supermicro	**Hardware Availability:**	Oct-2024
Tested by:	Supermicro	**Software Availability:**	Apr-2024



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	MPI	128	1	**153**	**14.7**	153	14.7			MPI	128	1	**153**	**14.7**	153	14.7		
513.soma_t	MPI	128	1	294	12.6	**295**	**12.6**			MPI	128	1	294	12.6	**295**	**12.6**		
518.tealeaf_t	MPI	128	1	186	8.89	**186**	**8.89**			MPI	128	1	186	8.89	**186**	**8.89**		
519.clvleaf_t	MPI	128	1	**189**	**8.74**	189	8.75			MPI	128	1	**189**	**8.74**	189	8.75		
521.miniswp_t	MPI	128	1	**181**	**8.85**	180	8.89			MPI	128	1	**181**	**8.85**	180	8.89		
528.pot3d_t	MPI	128	1	254	8.37	**254**	**8.36**			MPI	128	1	254	8.37	**254**	**8.36**		
532.sph_exa_t	MPI	128	1	160	12.2	**160**	**12.2**			MPI	128	1	160	12.2	**160**	**12.2**		
534.hpgmgfv_t	MPI	128	1	**176**	**6.67**	174	6.76			MPI	128	1	**176**	**6.67**	174	6.76		
535.weather_t	MPI	128	1	**55.1**	**58.6**	53.6	60.2			MPI	128	1	**55.1**	**58.6**	53.6	60.2		

SPEChpc 2021_tny_base = **12.0**

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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:	Hyper A+ Server AS -2126HS-TN
Compute Nodes Used:	1
Total Chips:	2
Total Cores:	64
Total Threads:	64
Total Memory:	1536 GB
Max. Peak Threads:	1

Software Summary

Compiler:	Intel oneAPI DPC++/C++ Compiler 2024.2.1
MPI Library:	Intel MPI Version 2021.13
Other MPI Info:	None
Other Software:	None
Base Parallel Model:	MPI
Base Ranks Run:	128
Base Threads Run:	1
Peak Parallel Models:	MPI
Minimum Peak Ranks:	128
Maximum Peak Ranks:	128
Max. Peak Threads:	1
Min. Peak Threads:	1

Node Description: Hyper A+ Server AS -2126HS-TN

Hardware

Number of nodes:	1
Uses of the node:	compute
Vendor:	Supermicro
Model:	Hyper A+ Server AS -2126HS-TN
CPU Name:	AMD EPYC 9355
CPU(s) orderable:	1,2 chips
Chips enabled:	2
Cores enabled:	64
Cores per chip:	32
Threads per core:	1
CPU Characteristics:	Max. Boost Clock upto 4.4GHz
CPU MHz:	3550
Primary Cache:	32 KB I + 48 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	256 MB I+D on chip per chip, 32 MB shared / 4 cores
Other Cache:	None
Memory:	1536 GB (24 x 64 GB 2Rx4 PC5-6400B-R, running at 6000)
Disk Subsystem:	1 x 3.5 TB NVMe SSD
Other Hardware:	None
Accel Count:	None
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:	Ubuntu 24.04 LTS Kernel 6.8.0-44-generic
Local File System:	ext4
Shared File System:	None
System State:	Multi-user, run level 3
Other Software:	None

Node Description: Hyper A+ Server AS -2126HS-TN

Hardware (Continued)

Ports Used: 0
Interconnect Type: None

Submit Notes

```
The config file option 'submit' was used.
mpiexec.hydra -bootstrap ssh -genv OMP_NUM_THREADS $threads -np $ranks -ppn $ranks $command
```

General Notes

```
 MPI startup command:
   mpiexec.hydra command was used to start MPI jobs.
```

Compiler Version Notes

```
==============================================================================
 CXXC 532.sph_exa_t(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler 2024.2.1 (2024.2.1.20240711)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir:
  /home/amd/spack/opt/spack/linux-ubuntu24.04-zen4/gcc-13.2.0/intel-oneapi-compilers-2024.2.1-njykuawredfxjir45iz3erssyetxux3c/compiler/2024.2/bin/compiler
Configuration file:
  /home/amd/spack/opt/spack/linux-ubuntu24.04-zen4/gcc-13.2.0/intel-oneapi-compilers-2024.2.1-njykuawredfxjir45iz3erssyetxux3c/compiler/2024.2/bin/compiler/../icpx.cfg
------------------------------------------------------------------------------

==============================================================================
 CC  505.lbm_t(base, peak) 513.soma_t(base, peak) 518.tealeaf_t(base, peak)
      521.miniswp_t(base, peak) 534.hpgmgfv_t(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler 2024.2.1 (2024.2.1.20240711)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir:
  /home/amd/spack/opt/spack/linux-ubuntu24.04-zen4/gcc-13.2.0/intel-oneapi-compilers-2024.2.1-njykuawredfxjir45iz3erssyetxux3c/compiler/2024.2/bin/compiler
Configuration file:
  /home/amd/spack/opt/spack/linux-ubuntu24.04-zen4/gcc-13.2.0/intel-oneapi-compilers-2024.2.1-njykuawredfxjir45iz3erssyetxux3c/compiler/2024.2/bin/compiler/../icx.cfg
------------------------------------------------------------------------------

==============================================================================
 FC  519.clvleaf_t(base, peak) 528.pot3d_t(base, peak) 535.weather_t(base,
      peak)
```

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Compiler Version Notes (Continued)

```
------------------------------------------------------------------------------
ifx (IFX) 2024.2.1 20240711
Copyright (C) 1985-2024 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: -DSPEC_LP64
513.soma_t: -DSPEC_NO_VAR_ARRAY_REDUCE -DSPEC_LP64
518.tealeaf_t: -DSPEC_LP64
521.miniswp_t: -DSPEC_LP64
532.sph_exa_t: -DSPEC_LP64
534.hpgmgfv_t: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-Ofast -ipo -mprefer-vector-width=512 -march=skylake-avx512
-mtune=skylake-avx512 -ansi-alias

C++ benchmarks:
-Ofast -ipo -mprefer-vector-width=512 -march=skylake-avx512
-mtune=skylake-avx512 -ansi-alias

Fortran benchmarks:
-Ofast -ipo -mprefer-vector-width=512 -march=skylake-avx512
-mtune=skylake-avx512 -ansi-alias -nostandard-realloc-lhs
-align array64byte

Base Other Flags

C benchmarks:
-limf

C++ benchmarks:
-limf

Fortran benchmarks:
-limf

Peak Compiler Invocation

C benchmarks:
mpiicc -cc=icx

C++ benchmarks:
mpiicpc -cxx=icpx

Fortran benchmarks:
mpiifort -fc=ifx

Peak Portability Flags

505.lbm_t: -DSPEC_LP64
513.soma_t: -DSPEC_NO_VAR_ARRAY_REDUCE -DSPEC_LP64
518.tealeaf_t: -DSPEC_LP64
521.miniswp_t: -DSPEC_LP64
532.sph_exa_t: -DSPEC_LP64
534.hpgmgfv_t: -DSPEC_LP64

Peak Optimization Flags

C benchmarks:

505.lbm_t: basepeak = yes

513.soma_t: basepeak = yes

518.tealeaf_t: basepeak = yes

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Peak Optimization Flags (Continued)

521.miniswp_t: `basepeak = yes`

534.hpgmgfv_t: `basepeak = yes`

C++ benchmarks:

532.sph_exa_t: `basepeak = yes`

Fortran benchmarks:

519.clvleaf_t: `basepeak = yes`

528.pot3d_t: `basepeak = yes`

535.weather_t: `basepeak = yes`

Peak Other Flags

C benchmarks:
`-limf`

C++ benchmarks:
`-limf`

Fortran benchmarks:
`-limf`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/hpc2021/flags/Intel_compiler_flags_hpc.2024.2024-10-10.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/hpc2021/flags/Intel_compiler_flags_hpc.2024.2024-10-10.xml`

Tested with SPEChpc2021 v1.1.7 on 2024-09-16 19:03:14-0400.
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