SPEChpc™ 2021 Tiny Result

Supermicro

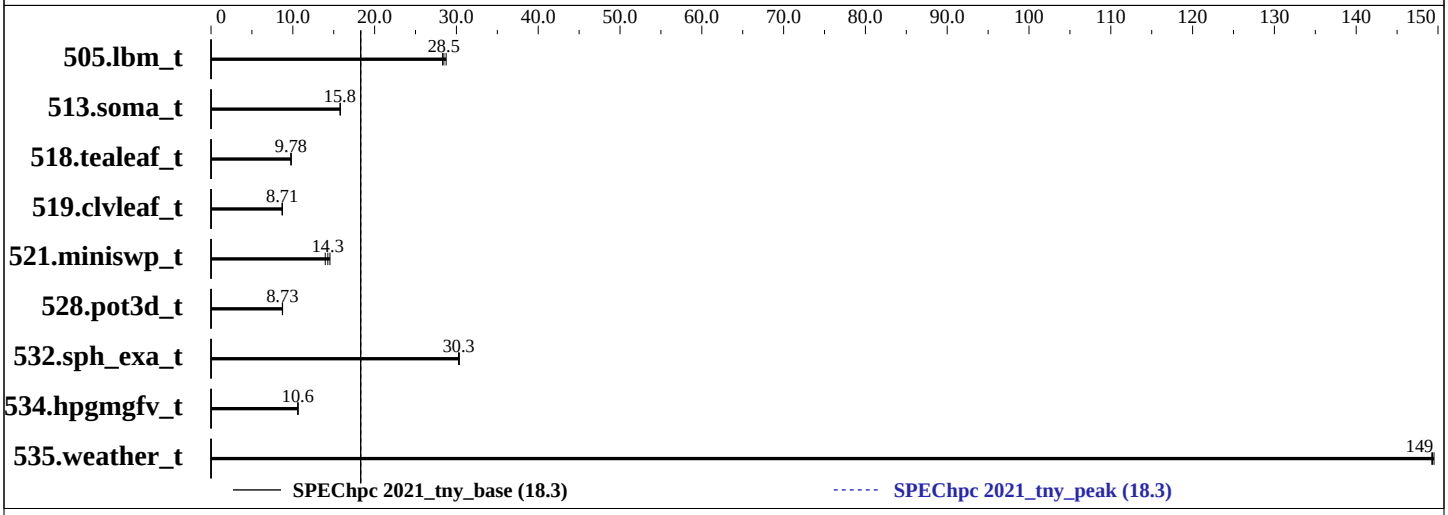
Hyper A+ Server AS -2126HS-TN (AMD EPYC 9965)

SPEChpc 2021_tny_base = 18.3

SPEChpc 2021_tny_peak = 18.3

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

Test Date: Sep-2024
Hardware Availability: Oct-2024
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	384	1	79.5	28.3	78.3	28.7	**79.0**	**28.5**	MPI	384	1	79.5	28.3	78.3	28.7	**79.0**	**28.5**
513.soma_t	MPI	384	1	234	15.8	234	15.8	**234**	**15.8**	MPI	384	1	234	15.8	234	15.8	**234**	**15.8**
518.tealeaf_t	MPI	384	1	**169**	**9.78**	169	9.78	168	9.80	MPI	384	1	**169**	**9.78**	169	9.78	168	9.80
519.clvleaf_t	MPI	384	1	189	8.72	190	8.69	**189**	**8.71**	MPI	384	1	189	8.72	190	8.69	**189**	**8.71**
521.miniswp_t	MPI	384	1	115	14.0	110	14.5	**112**	**14.3**	MPI	384	1	115	14.0	110	14.5	**112**	**14.3**
528.pot3d_t	MPI	384	1	**243**	**8.73**	244	8.72	243	8.75	MPI	384	1	**243**	**8.73**	244	8.72	243	8.75
532.sph_exa_t	MPI	384	1	64.4	30.3	**64.4**	**30.3**	64.2	30.4	MPI	384	1	64.4	30.3	**64.4**	**30.3**	64.2	30.4
534.hpgmgfv_t	MPI	384	1	**111**	**10.6**	111	10.6	110	10.6	MPI	384	1	**111**	**10.6**	111	10.6	110	10.6
535.weather_t	MPI	384	1	21.6	149	21.6	150	**21.6**	**149**	MPI	384	1	21.6	149	21.6	150	**21.6**	**149**

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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:	384
Total Threads:	384
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:	384
Base Threads Run:	1
Peak Parallel Models:	MPI
Minimum Peak Ranks:	384
Maximum Peak Ranks:	384
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 9965
CPU(s) orderable:	1,2 chips
Chips enabled:	2
Cores enabled:	384
Cores per chip:	192
Threads per core:	1
CPU Characteristics:	Max. Boost Clock upto 3.7GHz
CPU MHz:	2250
Primary Cache:	32 KB I + 48 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	384 MB I+D on chip per chip, 32 MB shared / 16 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`

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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