SPEChpc™ 2021 Tiny Result

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Supermicro

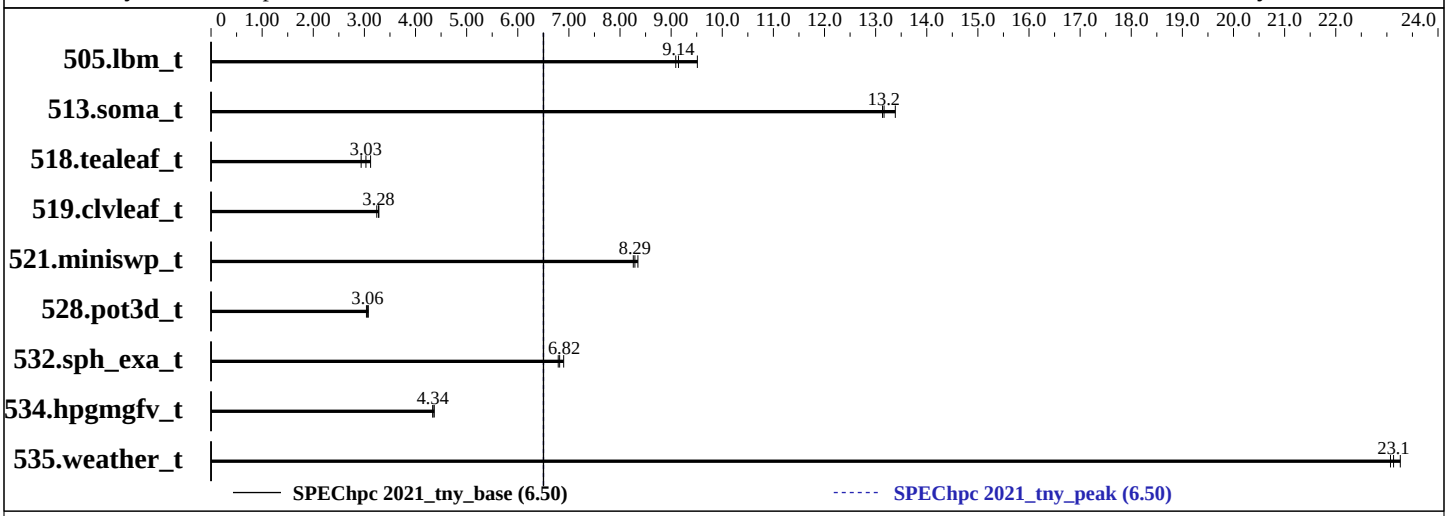
A+ Server 1115CS-TNR (AMD EPYC 9654)

SPEChpc 2021_tny_base = 6.50

SPEChpc 2021_tny_peak = 6.50

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

Test Date: Oct-2022
Hardware Availability: Nov-2022
Software Availability: Nov-2022



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	12	16	**246**	**9.14**	237	9.51	248	9.09	OMP	12	16	**246**	**9.14**	237	9.51	248	9.09
513.soma_t	OMP	12	16	282	13.1	276	13.4	**281**	**13.2**	OMP	12	16	282	13.1	276	13.4	**281**	**13.2**
518.tealeaf_t	OMP	12	16	562	2.94	529	3.12	**545**	**3.03**	OMP	12	16	562	2.94	529	3.12	**545**	**3.03**
519.clvleaf_t	OMP	12	16	509	3.24	503	3.28	**503**	**3.28**	OMP	12	16	509	3.24	503	3.28	**503**	**3.28**
521.miniswp_t	OMP	12	16	192	8.35	194	8.26	**193**	**8.29**	OMP	12	16	192	8.35	194	8.26	**193**	**8.29**
528.pot3d_t	OMP	12	16	**694**	**3.06**	691	3.08	699	3.04	OMP	12	16	**694**	**3.06**	691	3.08	699	3.04
532.sph_exa_t	OMP	12	16	287	6.79	283	6.90	**286**	**6.82**	OMP	12	16	287	6.79	283	6.90	**286**	**6.82**
534.hpgmgfv_t	OMP	12	16	271	4.34	269	4.37	**271**	**4.34**	OMP	12	16	271	4.34	269	4.37	**271**	**4.34**
535.weather_t	OMP	12	16	**139**	**23.1**	140	23.1	139	23.3	OMP	12	16	**139**	**23.1**	140	23.1	139	23.3

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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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Test Date: Oct-2022
Hardware Availability: Nov-2022
Software Availability: Nov-2022

Hardware Summary

Type of System:	Homogenous
Compute Node:	A+ Server 1115CS-TNR
Compute Nodes Used:	1
Total Chips:	1
Total Cores:	96
Total Threads:	192
Total Memory:	768 GB
Max. Peak Threads:	16

Software Summary

Compiler:	AMD Optimizing C/C++ and Fortran Compilers (AOCC) Version 4.0.0 Build 389 for Linux
MPI Library:	OpenMPI Version 4.1.1
Other MPI Info:	None
Other Software:	None
Base Parallel Model:	OMP
Base Ranks Run:	12
Base Threads Run:	16
Peak Parallel Models:	OMP
Minimum Peak Ranks:	12
Maximum Peak Ranks:	12
Max. Peak Threads:	16
Min. Peak Threads:	16

Node Description: A+ Server 1115CS-TNR

Hardware

Number of nodes:	1
Uses of the node:	compute
Vendor:	Super Micro Computer, Inc
Model:	A+ Server 1115CS-TNR
CPU Name:	AMD EPYC 9654
CPU(s) orderable:	1 chip
Chips enabled:	1
Cores enabled:	96
Cores per chip:	96
Threads per core:	2
CPU Characteristics:	Max. Boost Clock upto 3.7GHz
CPU MHz:	2400
Primary Cache:	32 KB I + 32 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
Other Cache:	None
Memory:	768 GB (12 x 64 GB 2Rx4 PC5-4800B-R)
Disk Subsystem:	10 x 1.92 TB NVMe PCIe Gen4.0
Other Hardware:	None
Accel Count:	--
Accel Model:	--
Accel Vendor:	--
Accel Type:	--
Accel Connection:	--
Accel ECC enabled:	--
Accel Description:	--
Adapter:	Mellanox ConnectX-5 Ex
Number of Adapters:	1
Slot Type:	PCI-Express 4.0 x16
Data Rate:	100 Gbits/s
Ports Used:	1
Interconnect Type:	Nvidia Mellanox ConnectX-5 Ex

Software

Accelerator Driver:	--
Adapter:	Mellanox ConnectX-5 Ex
Adapter Driver:	None
Adapter Firmware:	None
Operating System:	SUSE Linux Enterprise Server 15 SP4 Kernel 5.14.21-150400.24.21-default
Local File System:	ext4
Shared File System:	NFS share
System State:	Multi-user, run level 3
Other Software:	None

Submit Notes

```
The config file option 'submit' was used.
```

General Notes

```
 MPI startup command:
   mpirun command was used to start MPI jobs.
```

Compiler Version Notes

```
==============================================================================
 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)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /root/aocc/aocc-compiler-rel-4.0-3206-389/bin
------------------------------------------------------------------------------

==============================================================================
 CXXC 532.sph_exa_t(base, peak)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /root/aocc/aocc-compiler-rel-4.0-3206-389/bin
------------------------------------------------------------------------------

==============================================================================
 FC  519.clvleaf_t(base, peak) 528.pot3d_t(base, peak) 535.weather_t(base,
     peak)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /root/aocc/aocc-compiler-rel-4.0-3206-389/bin
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
mpicc

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Base Compiler Invocation (Continued)

C++ benchmarks:
mpicxx

Fortran benchmarks:
mpif90

Base Portability Flags

519.clvleaf_t: -DSPEC_USE_MPIFH
528.pot3d_t: -DSPEC_USE_MPIFH
535.weather_t: -DSPEC_USE_MPIFH

Base Optimization Flags

C benchmarks:
-O3 -ffast-math -flto -march=znver4 -fopenmp

C++ benchmarks:
-O3 -ffast-math -flto -march=znver4 -fopenmp

Fortran benchmarks:
-O3 -ffast-math -flto -march=znver4 -fopenmp

Base Other Flags

C benchmarks (except as noted below):
-Ispecmpitime -I/root/aocc/aocc-compiler-rel-4.0-3206-389/include

521.miniswp_t: -Ispecmpitime/
-I/root/aocc/aocc-compiler-rel-4.0-3206-389/include

534.hpgmgfv_t: -Ispecmpitime
-I/root/aocc/aocc-compiler-rel-4.0-3206-389/include

C++ benchmarks:
-Ispecmpitime -I/root/aocc/aocc-compiler-rel-4.0-3206-389/include

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Base Other Flags (Continued)

Fortran benchmarks (except as noted below):
`-I/root/aocc/aocc-compiler-rel-4.0-3206-389/include`
`-I/root/aocc/compilers/openmpi-4.1.1/include/`

519.clvleaf_t: `-Ispecmpitime`
`-I/root/aocc/aocc-compiler-rel-4.0-3206-389/include`
`-I/root/aocc/compilers/openmpi-4.1.1/include/`

Peak Compiler Invocation

C benchmarks:
`mpicc`

C++ benchmarks:
`mpicxx`

Fortran benchmarks:
`mpif90`

Peak Portability Flags

519.clvleaf_t: `-DSPEC_USE_MPIFH`
528.pot3d_t: `-DSPEC_USE_MPIFH`
535.weather_t: `-DSPEC_USE_MPIFH`

Peak Optimization Flags

C benchmarks:

505.lbm_t: `basepeak = yes`

513.soma_t: `basepeak = yes`

518.tealeaf_t: `basepeak = yes`

521.miniswp_t: `basepeak = yes`

534.hpgmgfv_t: `basepeak = yes`

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Peak Optimization Flags (Continued)

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 (except as noted below):
`-Ispecmpitime -I/root/aocc/aocc-compiler-rel-4.0-3206-389/include`

521.miniswp_t: `-Ispecmpitime/`
`-I/root/aocc/aocc-compiler-rel-4.0-3206-389/include`

534.hpgmgfv_t: `-Ispecmpitime`
`-I/root/aocc/aocc-compiler-rel-4.0-3206-389/include`

C++ benchmarks:
`-Ispecmpitime -I/root/aocc/aocc-compiler-rel-4.0-3206-389/include`

Fortran benchmarks (except as noted below):
`-I/root/aocc/aocc-compiler-rel-4.0-3206-389/include`
`-I/root/aocc/compilers/openmpi-4.1.1/include/`

519.clvleaf_t: `-Ispecmpitime`
`-I/root/aocc/aocc-compiler-rel-4.0-3206-389/include`
`-I/root/aocc/compilers/openmpi-4.1.1/include/`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/hpc2021/flags/amd2021_flags.2022-11-10.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/hpc2021/flags/amd2021_flags.2022-11-10.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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