SPEChpc™ 2021 Tiny Result

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Advanced Micro Devices

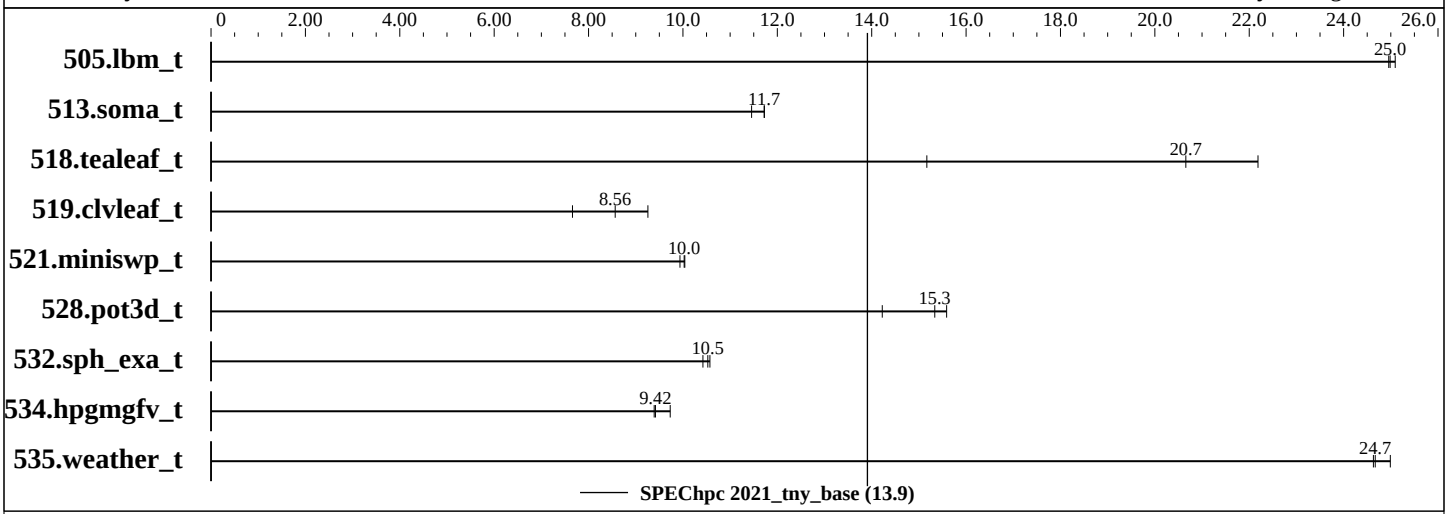
Dallas Milan Cluster: Gigabyte H262-Z63 (AMD EPYC 7763)

SPEChpc 2021_tny_base = 13.9

SPEChpc 2021_tny_peak = Not Run

hpc2021 License: 0017
Test Sponsor: Advanced Micro Devices
Tested by: Advanced Micro Devices

Test Date: Aug-2021
Hardware Availability: Apr-2021
Software Availability: Aug-2021



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	512	1	89.7	25.1	**90.1**	**25.0**	90.2	25.0									
513.soma_t	MPI	512	1	323	11.5	316	11.7	**316**	**11.7**									
518.tealeaf_t	MPI	512	1	109	15.2	**79.9**	**20.7**	74.4	22.2									
519.clvleaf_t	MPI	512	1	**193**	**8.56**	178	9.26	215	7.66									
521.miniswp_t	MPI	512	1	161	9.94	159	10.0	**160**	**10.0**									
528.pot3d_t	MPI	512	1	**139**	**15.3**	149	14.2	136	15.6									
532.sph_exa_t	MPI	512	1	184	10.6	**185**	**10.5**	187	10.4									
534.hpgmgfv_t	MPI	512	1	**125**	**9.42**	125	9.39	121	9.73									
535.weather_t	MPI	512	1	131	24.6	129	25.0	**131**	**24.7**									

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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 Cluster
Compute Node:	Gigabyte H262-Z63
Interconnect:	Mellanox
Compute Nodes Used:	4
Total Chips:	8
Total Cores:	512
Total Threads:	512
Total Memory:	2 TB
Max. Peak Threads:	--

Software Summary

Compiler:	LLVM/Clang 13.0 C/C++/Fortran: Version 13.0-0 MLSE ROCm 4.3.0 Compilers Compiler available by installing ROCm 4.3 or getting llvm-amdgpu_13.0.0.21295.40300_amd64.deb openmp-extras4.3.0_12.43.0.40300-52_amd64.deb
MPI Library:	OpenMPI Version 4.0.5
Other MPI Info:	None
Other Software:	None
Base Parallel Model:	MPI
Base Ranks Run:	512
Base Threads Run:	1
Peak Parallel Models:	Not Run
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--
Max. Peak Threads:	--
Min. Peak Threads:	--

Node Description: Gigabyte H262-Z63

Hardware

Number of nodes:	4
Uses of the node:	compute
Vendor:	Gigabyte
Model:	Gigabyte H262-Z63
CPU Name:	AMD EPYC 7763
CPU(s) orderable:	1,2 chips
Chips enabled:	2
Cores enabled:	128
Cores per chip:	64
Threads per core:	1
CPU Characteristics:	Max Boost Clock disabled
CPU MHz:	2450
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	512 KB I+D on chip per core
L3 Cache:	256 MB I+D on chip per chip 32 MB shared / 8 cores
Other Cache:	None
Memory:	512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R)
Disk Subsystem:	Intel SSD 520 Series 240GB, 2.5in SATA 6Gb/s
Other Hardware:	None
Accel Count:	--
Accel Model:	--
Accel Vendor:	--
Accel Type:	--
Accel Connection:	--
Accel ECC enabled:	--
Accel Description:	--

(Continued on next page)

Software

Accelerator Driver:	--
Adapter:	ConnectX-6 Dual port, model number: MCX653106A
Adapter Driver:	None
Adapter Firmware:	None
Operating System:	CentOS Linux release 8.3.2011 Kernel 4.18.0-193 [native to CentOS 8.3]
Local File System:	xfs
Shared File System:	NFS share
System State:	Multi-user, run level 3
Other Software:	None

Node Description: Gigabyte H262-Z63

Hardware (Continued)

Adapter:	ConnectX-6 Dual port, model number: MCX653106A
Number of Adapters:	0
Slot Type:	None
Data Rate:	None
Ports Used:	0
Interconnect Type:	None

Interconnect Description: Mellanox

Hardware

Vendor:	Mellanox
Model:	NVIDIA MCX653106A-EFAT ConnectX-6 VPI Adapter Card HDR100/EDR/100GbE
Switch Model:	MLNX_OFED_LINUX-5.2.1.0 (OFED-5.2.1.0) Switch: 27_2008_2202-MQM8790-HS2X_Ax
Number of Switches:	2
Number of Ports:	40
Data Rate:	InfiniBand HDR 100 Gb/s
Firmware:	HCA: 20.29.1016
Topology:	non-blocking fat tree
Primary Use:	MPI Traffic

Software

: --

Submit Notes

```
The config file option 'submit' was used.
 MPI startup command:
   mpirun command was used to start MPI jobs.
```

Compiler Version Notes

```
==============================================================================
 CXXC 532.sph_exa_t(base)
------------------------------------------------------------------------------
/home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin/clang++: /lib64/libtinfo.so.5:
  no version information available (required by
  /home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin/clang++)
clang version 13.0.0 (https://github.com/RadeonOpenCompute/llvm-project
  roc-4.3.0 21295 f2943f684437d2c1143a56e418d29fc6b3314072)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin
------------------------------------------------------------------------------
```

(Continued on next page)

Compiler Version Notes (Continued)

```
==============================================================================
 CC  505.lbm_t(base) 513.soma_t(base) 518.tealeaf_t(base) 521.miniswp_t(base)
     534.hpgmgfv_t(base)
------------------------------------------------------------------------------
/home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin/clang: /lib64/libtinfo.so.5: no
  version information available (required by
  /home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin/clang)
clang version 13.0.0 (https://github.com/RadeonOpenCompute/llvm-project
  roc-4.3.0 21295 f2943f684437d2c1143a56e418d29fc6b3314072)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin
------------------------------------------------------------------------------

==============================================================================
 FC  519.clvleaf_t(base) 528.pot3d_t(base) 535.weather_t(base)
------------------------------------------------------------------------------
/home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin/flang: /lib64/libtinfo.so.5: no
  version information available (required by
  /home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin/flang)
flang-new version 13.0.0 (https://github.com/RadeonOpenCompute/llvm-project
  roc-4.3.0 21295 f2943f684437d2c1143a56e418d29fc6b3314072)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`mpicc`

C++ benchmarks:
`mpicxx`

Fortran benchmarks:
`mpif90`

Base Portability Flags

519.clvleaf_t: `-DSPEC_USE_MPIFH`
521.miniswp_t: `-DUSE_KBA -DUSE_ACCELDIR`

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Base Portability Flags (Continued)

528.pot3d_t: `-DSPEC_USE_MPIFH`
532.sph_exa_t: `-DSPEC_USE_LT_IN_KERNELS`
535.weather_t: `-DSPEC_USE_MPIFH`

Base Optimization Flags

C benchmarks:
`-O3`

C++ benchmarks:
`-O3`

Fortran benchmarks:
`-O3`

Base Other Flags

C benchmarks:
`-I/home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/include`

C++ benchmarks:
`-I/home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/include`

Fortran benchmarks:
`-I/home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/include`
`-I/home/software/openmpi/aocc30/4.0.5/include/`

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

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