SPEChpc™ 2021 Small Result

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Supermicro

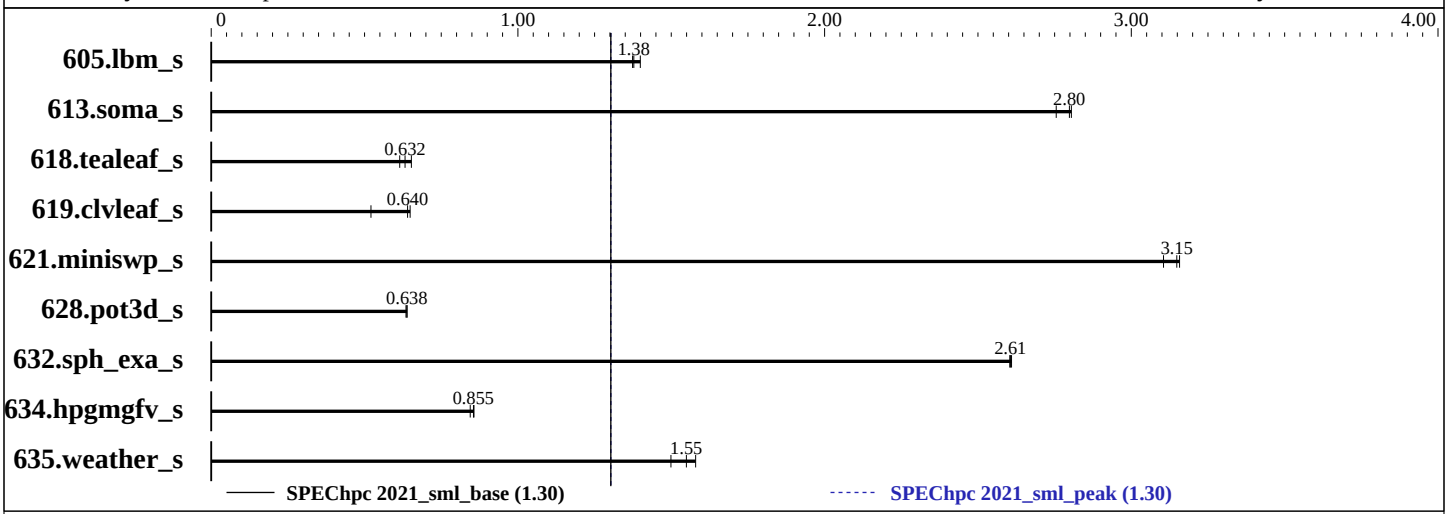
A+ Server 2125HS-TNR (AMD EPYC 9654)

SPEChpc 2021_sml_base = 1.30

SPEChpc 2021_sml_peak = 1.30

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
605.lbm_s	OMP	24	16	1128	1.37	1108	1.40	**1125**	**1.38**	OMP	24	16	1128	1.37	1108	1.40	**1125**	**1.38**
613.soma_s	OMP	24	16	**572**	**2.80**	581	2.76	571	2.80	OMP	24	16	**572**	**2.80**	581	2.76	571	2.80
618.tealeaf_s	OMP	24	16	**3243**	**0.632**	3141	0.653	3335	0.615	OMP	24	16	**3243**	**0.632**	3141	0.653	3335	0.615
619.clvleaf_s	OMP	24	16	3168	0.521	2544	0.649	**2577**	**0.640**	OMP	24	16	3168	0.521	2544	0.649	**2577**	**0.640**
621.miniswp_s	OMP	24	16	348	3.16	354	3.11	**349**	**3.15**	OMP	24	16	348	3.16	354	3.11	**349**	**3.15**
628.pot3d_s	OMP	24	16	**2625**	**0.638**	2624	0.638	2638	0.635	OMP	24	16	**2625**	**0.638**	2624	0.638	2638	0.635
632.sph_exa_s	OMP	24	16	883	2.60	**883**	**2.61**	881	2.61	OMP	24	16	883	2.60	**883**	**2.61**	881	2.61
634.hpgmgfv_s	OMP	24	16	**1140**	**0.855**	1138	0.857	1155	0.845	OMP	24	16	**1140**	**0.855**	1138	0.857	1155	0.845
635.weather_s	OMP	24	16	1646	1.58	**1678**	**1.55**	1735	1.50	OMP	24	16	1646	1.58	**1678**	**1.55**	1735	1.50

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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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Software Availability: Nov-2022

Hardware Summary

Type of System:	Homogenous
Compute Node:	A+ Server 2125HS-TNR
Compute Nodes Used:	1
Total Chips:	2
Total Cores:	192
Total Threads:	192
Total Memory:	1536 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:	24
Base Threads Run:	16
Peak Parallel Models:	OMP
Minimum Peak Ranks:	24
Maximum Peak Ranks:	24
Max. Peak Threads:	16
Min. Peak Threads:	16

Node Description: A+ Server 2125HS-TNR

Hardware

Number of nodes:	1
Uses of the node:	compute
Vendor:	Supermicro
Model:	A+ Server 2125HS-TNR
CPU Name:	AMD EPYC 9654
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	192
Cores per chip:	96
Threads per core:	1
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:	1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)
Disk Subsystem:	1 x 960 GB 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:	Ubuntu 22.04 Kernel 5.15.0-50-generic
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  605.lbm_s(base, peak) 613.soma_s(base, peak) 618.tealeaf_s(base, peak)
     621.miniswp_s(base, peak) 634.hpgmgfv_s(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 632.sph_exa_s(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  619.clvleaf_s(base, peak) 628.pot3d_s(base, peak) 635.weather_s(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

(Continued on next page)

Base Compiler Invocation (Continued)

C++ benchmarks:
mpicxx

Fortran benchmarks:
mpif90

Base Portability Flags

619.clvleaf_s: -DSPEC_USE_MPIFH
628.pot3d_s: -DSPEC_USE_MPIFH
635.weather_s: -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:
-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/

619.clvleaf_s: -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

619.clvleaf_s: `-DSPEC_USE_MPIFH`
628.pot3d_s: `-DSPEC_USE_MPIFH`
635.weather_s: `-DSPEC_USE_MPIFH`

Peak Optimization Flags

C benchmarks:

605.lbm_s: `basepeak = yes`

613.soma_s: `basepeak = yes`

618.tealeaf_s: `basepeak = yes`

621.miniswp_s: `basepeak = yes`

634.hpgmgfv_s: `basepeak = yes`

C++ benchmarks:

632.sph_exa_s: `basepeak = yes`

Fortran benchmarks:

619.clvleaf_s: `basepeak = yes`

628.pot3d_s: `basepeak = yes`

635.weather_s: `basepeak = yes`

Peak Other Flags

C benchmarks:
`-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/`

619.clvleaf_s: `-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.

Tested with SPEChpc2021 v1.1.7 on 2022-10-17 06:19:37-0400.
Report generated on 2022-11-10 15:09:16 by hpc2021 PS formatter v1.0.3.
Originally published on 2022-11-10.