



SPEChpc™ 2021 Small Result

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Supermicro

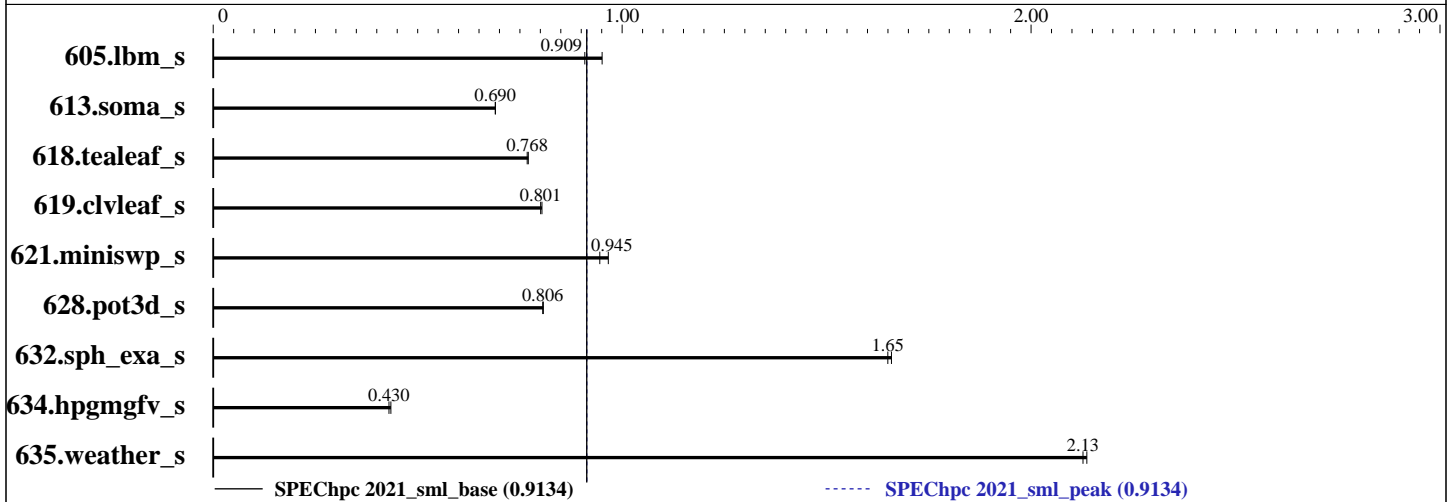
SPEChpc 2021_sml_base = 0.9134

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

SPEChpc 2021_sml_peak = 0.9134

hpc2021 License: 001176
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
605.lbm_s	MPI	128	1	1630	0.951	1706	0.909			MPI	128	1	1630	0.951	1706	0.909		
613.soma_s	MPI	128	1	2320	0.690	2319	0.690			MPI	128	1	2320	0.690	2319	0.690		
618.tealeaf_s	MPI	128	1	2660	0.771	2670	0.768			MPI	128	1	2660	0.771	2670	0.768		
619.clvleaf_s	MPI	128	1	2061	0.801	2052	0.804			MPI	128	1	2061	0.801	2052	0.804		
621.miniswp_s	MPI	128	1	1164	0.945	1138	0.966			MPI	128	1	1164	0.945	1138	0.966		
628.pot3d_s	MPI	128	1	2079	0.806	2075	0.807			MPI	128	1	2079	0.806	2075	0.807		
632.sph_exa_s	MPI	128	1	1387	1.66	1394	1.65			MPI	128	1	1387	1.66	1394	1.65		
634.hpgmgfv_s	MPI	128	1	2244	0.434	2268	0.430			MPI	128	1	2244	0.434	2268	0.430		
635.weather_s	MPI	128	1	1222	2.13	1217	2.14			MPI	128	1	1222	2.13	1217	2.14		

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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: Supermicro Hyper A+ Server AS -2126HS-TN
Compute Nodes Used: 1
Total Chips: 2
Total Cores: 64
Total Threads: 128
Total Memory: 1536 GB
Max. Peak Threads: 1

Software Summary

Compiler: Intel oneAPI DPC++/C++ Compiler 2024.2.1
MPI Library: OpenMPI Version 5.0.5
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: Supermicro 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: 2
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
Other Hardware: H14DSH
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

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: NFS share
System State: Multi-user, run level 3
Other Software: None

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

Hardware (Continued)

Ports Used: 0
Interconnect Type: None

Submit Notes

The config file option 'submit' was used.

General Notes

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

BIOS Settings:
NUMA nodes per socket: NPS4
ACPI SRAT L3 Cache AS NUMA Domain: Enabled
Determinism Control : Manual
Determinism Enable : Power
xGMI Link Configuration : 4 xGMI Links
4 Link xGMI max speed : 32Gbps
TDP Control : Manual
TDP : 300
Package Power Limit Control : Manual
Package Power Limit : 300

Compiler Version Notes

=====
CXXC 632.sph_exa_s(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 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)

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Compiler Version Notes (Continued)

```

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 619.clvleaf_s(base, peak) 628.pot3d_s(base, peak) 635.weather_s(base,
    peak)
-----

ifx (IFX) 2024.2.1 20240711
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```

Base Compiler Invocation

```

C benchmarks:
mpiicc      -cc=icx

C++ benchmarks:
mpicpc     -cxx=icpx

Fortran benchmarks:
mpiifort   -fc=ifx

```

Base Portability Flags

```

605.lbm_s: -DSPEC_LP64
613.soma_s: -DSPEC_LP64
618.tealeaf_s: -DSPEC_LP64
621.miniswp_s: -DSPEC_LP64
632.sph_exa_s: -DSPEC_LP64
634.hpgmgfv_s: -DSPEC_LP64

```

Base Optimization Flags

```

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

```

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Base Optimization Flags (Continued)

C benchmarks (continued):

-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

605.lbm_s: -DSPEC_LP64
613.soma_s: -DSPEC_LP64
618.tealeaf_s: -DSPEC_LP64

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Peak Portability Flags (Continued)

621.miniswp_s: -DSPEC_LP64
632.sph_exa_s: -DSPEC_LP64
634.hpgmgfv_s: -DSPEC_LP64

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:

-limf

C++ benchmarks:

-limf

Fortran benchmarks:

-limf



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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

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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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