



SPEChpc™ 2021 Small Result

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Supermicro

SPEChpc 2021_sml_base = 1.83

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

SPEChpc 2021_sml_peak = 1.83

hpc2021 License: 6569

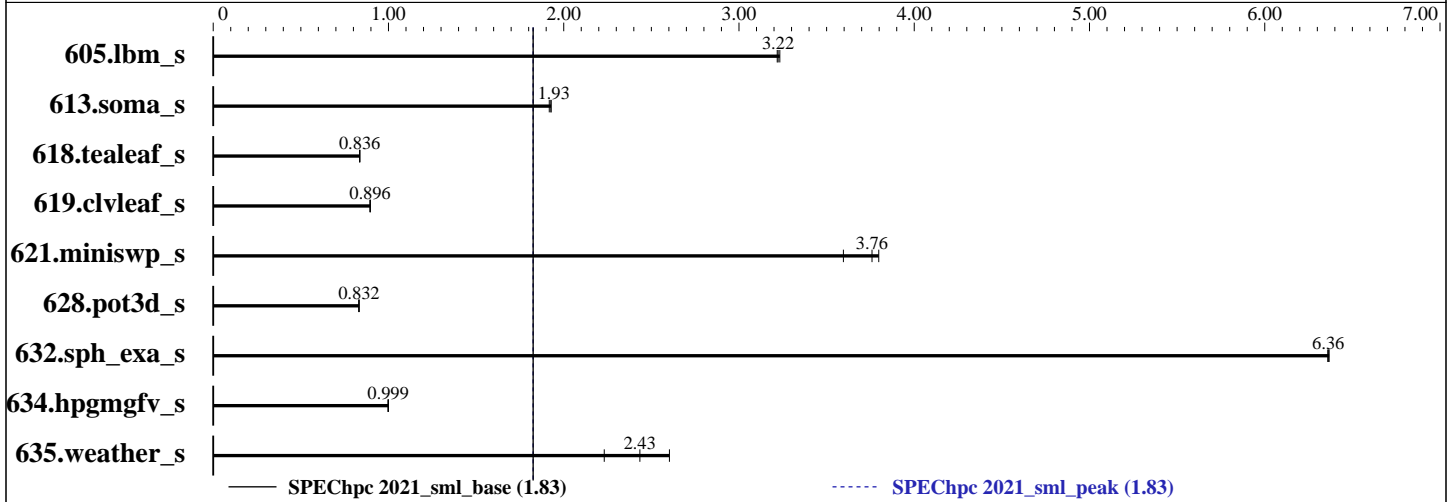
Test Date: Sep-2024

Test Sponsor: Supermicro

Hardware Availability: Oct-2024

Tested by: Supermicro

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 | 384 | 1 | 482 | 3.22 | 481 | 3.22 | 479 | 3.23 | MPI | 384 | 1 | 482 | 3.22 | 481 | 3.22 | 479 | 3.23 |
| 613.soma_s | MPI | 384 | 1 | 830 | 1.93 | 834 | 1.92 | 830 | 1.93 | MPI | 384 | 1 | 830 | 1.93 | 834 | 1.92 | 830 | 1.93 |
| 618.tealeaf_s | MPI | 384 | 1 | 2451 | 0.836 | 2451 | 0.836 | 2453 | 0.836 | MPI | 384 | 1 | 2451 | 0.836 | 2451 | 0.836 | 2453 | 0.836 |
| 619.clvleaf_s | MPI | 384 | 1 | 1842 | 0.896 | 1842 | 0.896 | 1843 | 0.895 | MPI | 384 | 1 | 1842 | 0.896 | 1842 | 0.896 | 1843 | 0.895 |
| 621.miniswp_s | MPI | 384 | 1 | 306 | 3.60 | 293 | 3.76 | 290 | 3.80 | MPI | 384 | 1 | 306 | 3.60 | 293 | 3.76 | 290 | 3.80 |
| 628.pot3d_s | MPI | 384 | 1 | 2016 | 0.831 | 2012 | 0.832 | 2013 | 0.832 | MPI | 384 | 1 | 2016 | 0.831 | 2012 | 0.832 | 2013 | 0.832 |
| 632.sph_exa_s | MPI | 384 | 1 | 362 | 6.36 | 361 | 6.37 | 361 | 6.36 | MPI | 384 | 1 | 362 | 6.36 | 361 | 6.37 | 361 | 6.36 |
| 634.hpgmgfv_s | MPI | 384 | 1 | 976 | 0.999 | 976 | 0.999 | 977 | 0.998 | MPI | 384 | 1 | 976 | 0.999 | 976 | 0.999 | 977 | 0.998 |
| 635.weather_s | MPI | 384 | 1 | 999 | 2.60 | 1068 | 2.43 | 1165 | 2.23 | MPI | 384 | 1 | 999 | 2.60 | 1068 | 2.43 | 1165 | 2.23 |

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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

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

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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 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)

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)

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Compiler Version Notes (Continued)

ifx (IFX) 2024.2.1 20240711
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Base Compiler Invocation

C benchmarks:
mpiicc -cc=icx

C++ benchmarks:
mpiicpc -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
-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



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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
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

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Peak Optimization Flags (Continued)

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

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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