



SPEChpc™ 2021 Small Result

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Supermicro

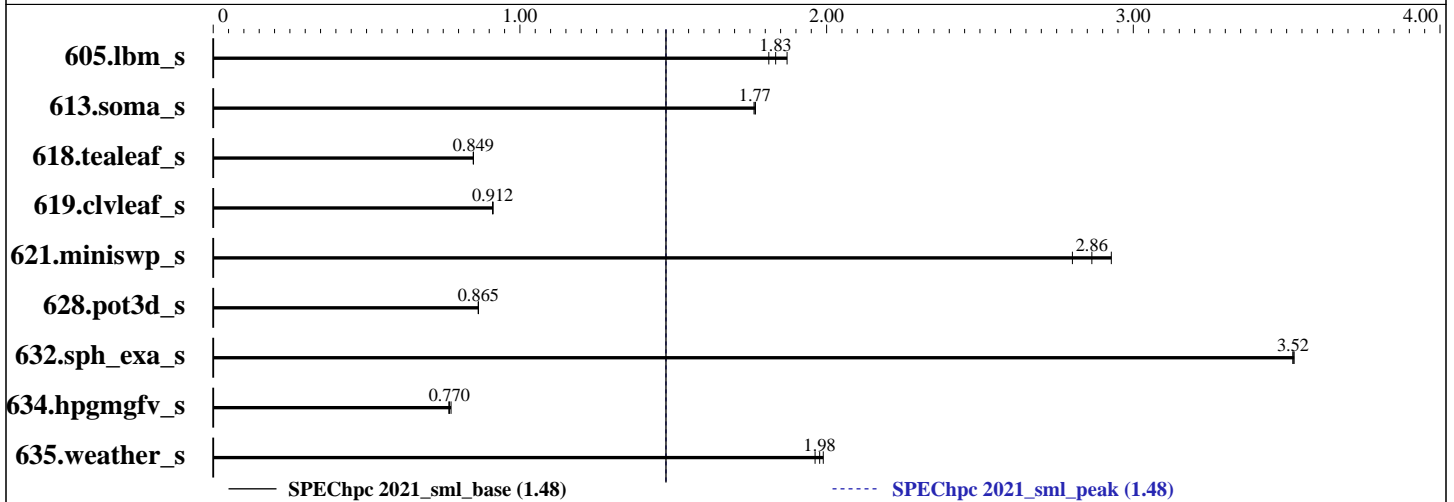
SPEChpc 2021_sml_base = 1.48

Hyper A+ Server AS -2126HS-TN (AMD EPYC 9555)

SPEChpc 2021_sml_peak = 1.48

hpc2021 License: 6569
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	828	1.87	856	1.81	845	1.83	MPI	128	1	828	1.87	856	1.81	845	1.83
613.soma_s	MPI	128	1	905	1.77	906	1.77	907	1.76	MPI	128	1	905	1.77	906	1.77	907	1.76
618.tealeaf_s	MPI	128	1	2416	0.849	2416	0.849	2418	0.848	MPI	128	1	2416	0.849	2416	0.849	2418	0.848
619.clvleaf_s	MPI	128	1	1810	0.912	1811	0.911	1809	0.912	MPI	128	1	1810	0.912	1811	0.911	1809	0.912
621.miniswp_s	MPI	128	1	393	2.80	384	2.86	376	2.93	MPI	128	1	393	2.80	384	2.86	376	2.93
628.pot3d_s	MPI	128	1	1937	0.865	1937	0.865	1938	0.864	MPI	128	1	1937	0.865	1937	0.865	1938	0.864
632.sph_exa_s	MPI	128	1	653	3.52	653	3.52	653	3.52	MPI	128	1	653	3.52	653	3.52	653	3.52
634.hpgmgfv_s	MPI	128	1	1269	0.768	1266	0.770	1257	0.775	MPI	128	1	1269	0.768	1266	0.770	1257	0.775
635.weather_s	MPI	128	1	1307	1.99	1325	1.96	1315	1.98	MPI	128	1	1307	1.99	1325	1.96	1315	1.98

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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: 128
Total Threads: 128
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: 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: 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 9555
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 upto 4.4GHz
CPU MHz: 3200
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 / 8 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:
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
-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:

mpicc -cc=icx

C++ benchmarks:

mpicpc -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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