



SPEChpc™ 2021 Small Result

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Dell Inc

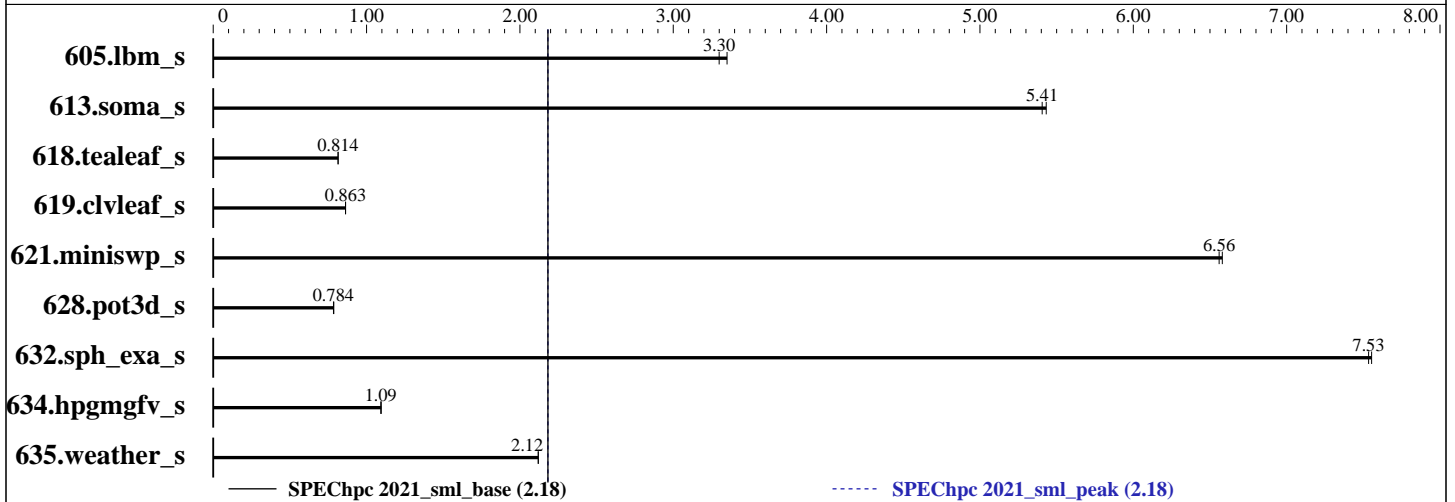
SPEChpc 2021_sml_base = 2.18

SPEChpc 2021_sml_peak = 2.18

Dell PowerEdge R7725 (AMD EPYC 9965 192-Core Processor)

hpc2021 License: 6573
Test Sponsor: Dell Inc
Tested by: Dell Inc

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	OMP	24	32	463	3.35	470	3.30			OMP	24	32	463	3.35	470	3.30		
613.soma_s	OMP	24	32	295	5.43	296	5.41			OMP	24	32	295	5.43	296	5.41		
618.tealeaf_s	OMP	24	32	2517	0.815	2518	0.814			OMP	24	32	2517	0.815	2518	0.814		
619.clvleaf_s	OMP	24	32	1912	0.863	1912	0.863			OMP	24	32	1912	0.863	1912	0.863		
621.miniswp_s	OMP	24	32	168	6.56	167	6.58			OMP	24	32	168	6.56	167	6.58		
628.pot3d_s	OMP	24	32	2136	0.784	2130	0.786			OMP	24	32	2136	0.784	2130	0.786		
632.sph_exa_s	OMP	24	32	304	7.55	305	7.53			OMP	24	32	304	7.55	305	7.53		
634.hpgmgfv_s	OMP	24	32	890	1.10	892	1.09			OMP	24	32	890	1.10	892	1.09		
635.weather_s	OMP	24	32	1227	2.12	1227	2.12			OMP	24	32	1227	2.12	1227	2.12		

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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: Dell PowerEdge R7725 (AMD EPYC 9965 192-Core Processor)
Compute Nodes Used: 1
Total Chips: 2
Total Cores: 384
Total Threads: 768
Total Memory: 1536 GB
Max. Peak Threads: 32

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: OMP
Base Ranks Run: 24
Base Threads Run: 32
Peak Parallel Models: OMP
Minimum Peak Ranks: 24
Maximum Peak Ranks: 24
Max. Peak Threads: 32
Min. Peak Threads: 32

Node Description: Dell PowerEdge R7725 (AMD EPYC 9965 192-Core Processor)

Hardware

Number of nodes: 1
Uses of the node: compute
Vendor: Dell Inc
Model: Dell PowerEdge R7725 (AMD EPYC 9965 192-Core Processor)
CPU Name: AMD EPYC 9965
CPU(s) orderable: 1-2 chips
Chips enabled: 2
Cores enabled: 384
Cores per chip: 192
Threads per core: 2
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
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

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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: Dell PowerEdge R7725 (AMD EPYC 9965 192-Core Processor)

Hardware (Continued)

Data Rate: None
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:

DIMM Self Healing (Post Package Repair) on Uncorrectable Memory Error: Disabled
Virtualization Technology: Disabled
DRAM Refresh Delay : Performance
NUMA nodes per socket: NPS4
L3 cache as NUMA Domain : Enabled
System Profile : Custom
CPU Power Management : OS DBPM
Determinism Control : Manual
Determinism Slider : Power Determinism
TDP Control : Manual
TDP : 500
PPT Control : Manual
PPT : 500

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

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Compiler Version Notes (Continued)

=====
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)
=====

ifx (IFX) 2024.2.1 20240711
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=====

Base Compiler Invocation

C benchmarks:

mpicc

C++ benchmarks:

mpicxx

Fortran benchmarks:

mpifort

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



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Base Optimization Flags

C benchmarks:

-Ofast -ipo -mprefer-vector-width=512 -march=skylake-avx512
-mtune=skylake-avx512 -qopenmp -ansi-alias

C++ benchmarks:

-Ofast -ipo -mprefer-vector-width=512 -march=skylake-avx512
-mtune=skylake-avx512 -qopenmp -ansi-alias

Fortran benchmarks:

-Ofast -ipo -mprefer-vector-width=512 -march=skylake-avx512
-mtune=skylake-avx512 -qopenmp -ansi-alias -nostandard-realloc-lhs
-align array64byte

Base Other Flags

C benchmarks:

-limf

C++ benchmarks:

-limf

Fortran benchmarks:

-limf

Peak Compiler Invocation

C benchmarks:

mpicc

C++ benchmarks:

mpicxx

Fortran benchmarks:

mpifort

Peak Portability Flags

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

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Peak Portability Flags (Continued)

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
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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