



SPEChpc™ 2021 Small Result

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Lenovo Global Technology

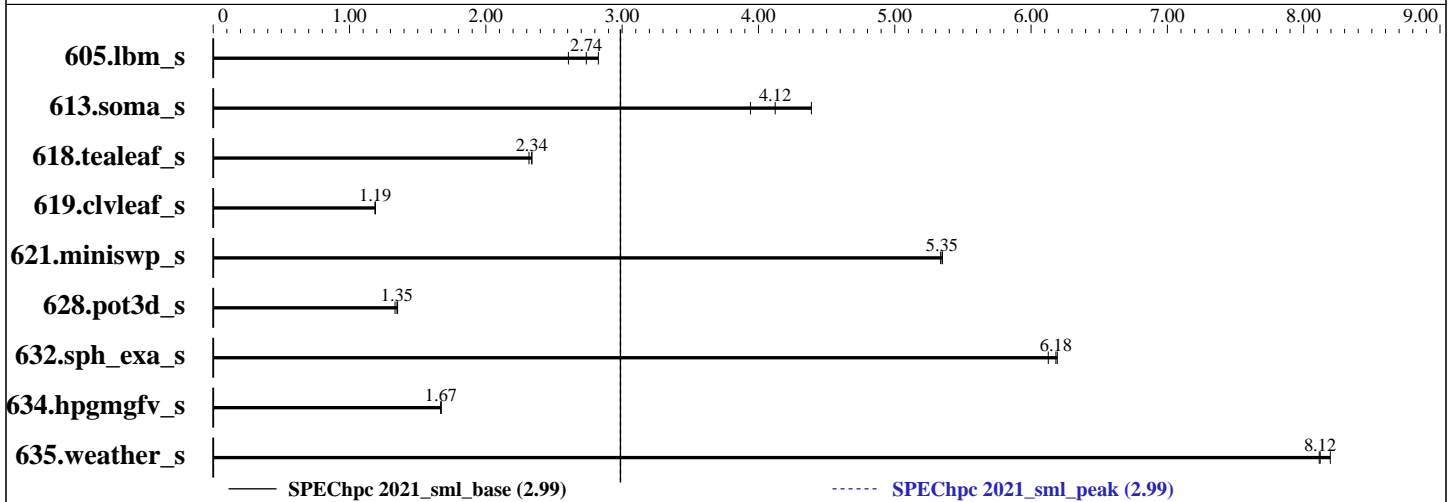
SPEChpc 2021_sml_base = 2.99

ThinkSystem SR665 (AMD EPYC 7773X)

SPEChpc 2021_sml_peak = 2.99

hpc2021 License: 28
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test Date: Jul-2022
Hardware Availability: Jul-2022
Software Availability: Jul-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	64	8	595	2.61	549	2.83	566	2.74	OMP	64	8	595	2.61	549	2.83	566	2.74
613.soma_s	OMP	64	8	406	3.94	365	4.39	388	4.12	OMP	64	8	406	3.94	365	4.39	388	4.12
618.tealeaf_s	OMP	64	8	877	2.34	877	2.34	885	2.32	OMP	64	8	877	2.34	877	2.34	885	2.32
619.cvlleaf_s	OMP	64	8	1388	1.19	1388	1.19	1388	1.19	OMP	64	8	1388	1.19	1388	1.19	1388	1.19
621.miniswp_s	OMP	64	8	206	5.35	206	5.35	206	5.34	OMP	64	8	206	5.35	206	5.35	206	5.34
628.pot3d_s	OMP	64	8	1256	1.33	1242	1.35	1238	1.35	OMP	64	8	1256	1.33	1242	1.35	1238	1.35
632.sph_exa_s	OMP	64	8	375	6.13	371	6.19	372	6.18	OMP	64	8	375	6.13	371	6.19	372	6.18
634.hpgmgfv_s	OMP	64	8	583	1.67	583	1.67	584	1.67	OMP	64	8	583	1.67	583	1.67	584	1.67
635.weather_s	OMP	64	8	317	8.20	320	8.12	320	8.11	OMP	64	8	317	8.20	320	8.12	320	8.11

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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: ThinkSystem SR665
Interconnect: Nvidia Mellanox ConnectX-6 HDR
Compute Nodes Used: 4
Total Chips: 8
Total Cores: 512
Total Threads: 1024
Total Memory: 4 TB
Max. Peak Threads: 8

Software Summary

Compiler: Intel C/C++/Fortran Compiler 2021.5.0
MPI Library: Open MPI 4.0.5
Other MPI Info: --
Other Software: --
Base Parallel Model: OMP
Base Ranks Run: 64
Base Threads Run: 8
Peak Parallel Models: OMP
Minimum Peak Ranks: 64
Maximum Peak Ranks: 64
Max. Peak Threads: 8
Min. Peak Threads: 8

Node Description: ThinkSystem SR665

Hardware

Number of nodes: 4
Uses of the node: Compute
Vendor: Lenovo Global Technology
Model: ThinkSystem SR665
CPU Name: AMD EPYC 7773X
CPU(s) orderable: 1,2 chips
Chips enabled: 2
Cores enabled: 128
Cores per chip: 64
Threads per core: 2
CPU Characteristics: Max Boost Clock up to 3.5 GHz
CPU MHz: 2200
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 512 KB I+D on chip per core
L3 Cache: 768 MB I+D on chip per chip
96 MB shared / 8 cores
Other Cache: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200A-R)
Disk Subsystem: 1x ThinkSystem 2.5" 5300 480GB SSD
Other Hardware: None
Accel Count: --
Accel Model: --
Accel Vendor: --
Accel Type: --
Accel Connection: --
Accel ECC enabled: --
Accel Description: --
Adapter: Mellanox ConnectX-6 HDR
Number of Adapters: 1
Slot Type: PCI-Express 4.0 x16
Data Rate: 200 Gbits/s
Ports Used: 1

Software

Accelerator Driver: --
Adapter: Mellanox ConnectX-6 HDR
Adapter Driver: 5.2-1.0.4
Adapter Firmware: 20.28.1002
Operating System: Red Hat Enterprise Linux Server release 8.5,
Kernel 4.18.0-348.el8.x86_64
Local File System: xfs
Shared File System: NFS
System State: Multi-user, run level 3
Other Software: None

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Node Description: ThinkSystem SR665

Hardware (Continued)

Interconnect Type: Nvidia Mellanox ConnectX-6 HDR

Interconnect Description: Nvidia Mellanox ConnectX-6 HDR

Hardware

Vendor: Nvidia
Model: Nvidia Mellanox ConnectX-6 HDR
Switch Model: QM8700
Number of Switches: 1
Number of Ports: 40
Data Rate: 200 Gb/s
Firmware: 3.9.0606
Topology: Mesh
Primary Use: MPI Traffic, NFS Access

Software

: --

Submit Notes

The config file option 'submit' was used.
submit = mpirun --allow-run-as-root --oversubscribe -genv coll_hcoll_enable 1
-x HCOLL_ENABLE_NBC=1 -x HCOLL_MAIN_IB=mlx5_0:1 -mca pml ucx
-hostfile /home/HPC2021F1.0.1/config/4nodes --map-by ppr:16:node:pe=8

Compiler Version Notes

=====
CC 605.lbm_s(base) 613.soma_s(base) 618.tealeaf_s(base) 621.miniswp_s(base)
634.hpgmgfv_s(base)
=====

Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
64, Version 2021.5.0 Build 20211109_000000
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.
=====

=====
CXXC 632.sph_exa_s(base)
=====

Intel(R) C++ Intel(R) 64 Compiler Classic for applications running on
Intel(R) 64, Version 2021.5.0 Build 20211109_000000
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Compiler Version Notes (Continued)

FC 619.clvleaf_s(base) 628.pot3d_s(base) 635.weather_s(base)

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
Intel(R) 64, Version 2021.5.0 Build 20211109_000000
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Base Compiler Invocation

C benchmarks:
mpicc

C++ benchmarks:
mpicxx

Fortran benchmarks:
mpifort

Base Portability Flags

613.soma_s: -DSPEC_NO_VAR_ARRAY_REDUCE

Base Optimization Flags

C benchmarks:
-Ofast -no-prec-div -march=core-avx2 -ipo -qopenmp -ansi-alias

C++ benchmarks:
-Ofast -no-prec-div -march=core-avx2 -ipo -qopenmp -ansi-alias

Fortran benchmarks:
-Ofast -no-prec-div -march=core-avx2 -ipo -qopenmp

Peak Optimization Flags

C benchmarks:
605.lbm_s: basepeak = yes

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Peak Optimization Flags (Continued)

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

The flags file that was used to format this result can be browsed at

http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2021-10-20.html

You can also download the XML flags source by saving the following link:

http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2021-10-20.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 v1.0.1 on 2022-07-07 03:54:37-0400.
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