



SPEChpc™ 2021 Small Result

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Lenovo Global Technology

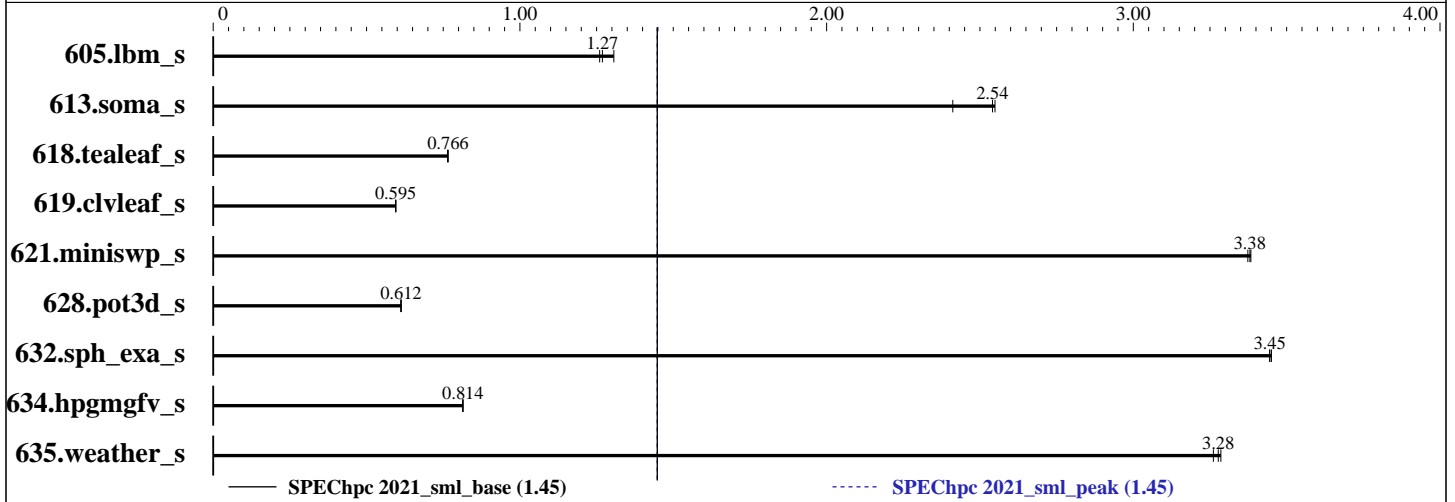
SPEChpc 2021_sml_base = 1.45

ThinkSystem SR665 (AMD EPYC 7773X)

SPEChpc 2021_sml_peak = 1.45

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	32	8	<u>1221</u>	<u>1.27</u>	1230	1.26	1187	1.31	OMP	32	8	<u>1221</u>	<u>1.27</u>	1230	1.26	1187	1.31
613.soma_s	OMP	32	8	664	2.41	630	2.54	628	2.55	OMP	32	8	664	2.41	630	2.54	628	2.55
618.tealeaf_s	OMP	32	8	<u>2677</u>	<u>0.766</u>	2677	0.766	2683	0.764	OMP	32	8	<u>2677</u>	<u>0.766</u>	2677	0.766	2683	0.764
619.clvleaf_s	OMP	32	8	2772	0.595	<u>2772</u>	<u>0.595</u>	2773	0.595	OMP	32	8	2772	0.595	<u>2772</u>	<u>0.595</u>	2773	0.595
621.miniswp_s	OMP	32	8	<u>325</u>	<u>3.38</u>	325	3.38	326	3.37	OMP	32	8	<u>325</u>	<u>3.38</u>	325	3.38	326	3.37
628.pot3d_s	OMP	32	8	<u>2735</u>	<u>0.612</u>	2738	0.612	2732	0.613	OMP	32	8	<u>2735</u>	<u>0.612</u>	2738	0.612	2732	0.613
632.sph_exa_s	OMP	32	8	667	3.45	668	3.44	668	3.45	OMP	32	8	667	3.45	668	3.44	668	3.45
634.hpgmgfv_s	OMP	32	8	<u>1198</u>	<u>0.814</u>	1199	0.813	1197	0.815	OMP	32	8	<u>1198</u>	<u>0.814</u>	1199	0.813	1197	0.815
635.weather_s	OMP	32	8	<u>793</u>	<u>3.28</u>	791	3.29	797	3.26	OMP	32	8	<u>793</u>	<u>3.28</u>	791	3.29	797	3.26

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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: 2
Total Chips: 4
Total Cores: 256
Total Threads: 512
Total Memory: 2 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: 32
Base Threads Run: 8
Peak Parallel Models: OMP
Minimum Peak Ranks: 32
Maximum Peak Ranks: 32
Max. Peak Threads: 8
Min. Peak Threads: 8

Node Description: ThinkSystem SR665

Hardware

Number of nodes: 2
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 19:23:31-0400.

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