



SPEChpc™ 2021 Small Result

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Lenovo Global Technology

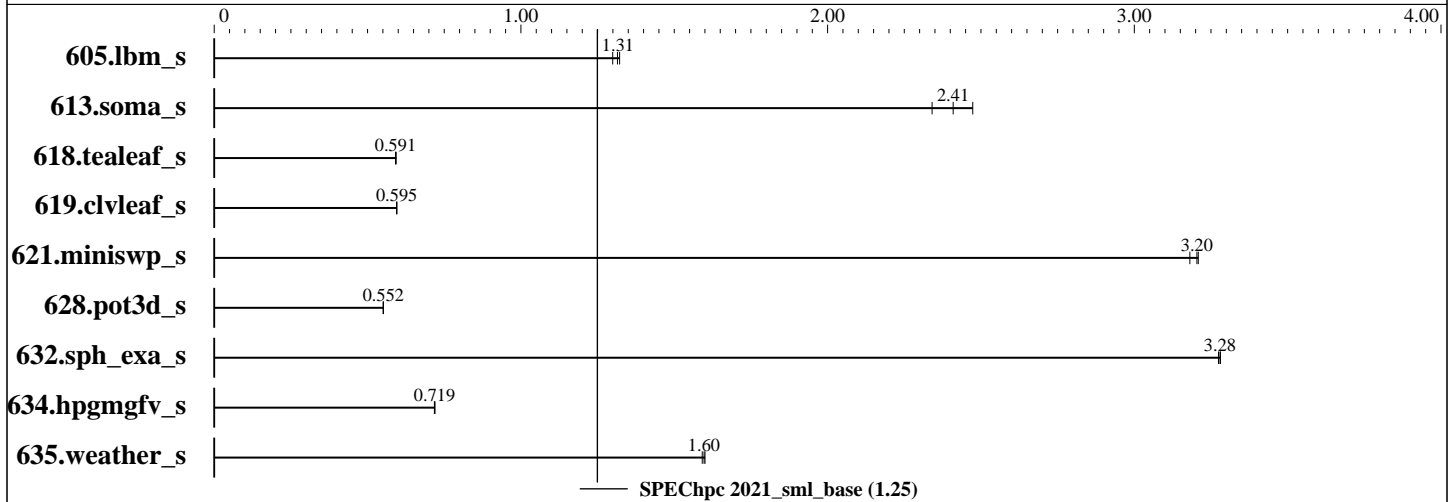
SPEChpc 2021_sml_base = 1.25

ThinkSystem SR665 (AMD EPYC 7763)

SPEChpc 2021_sml_peak = Not Run

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

Test Date: Aug-2021
Hardware Availability: Mar-2021
Software Availability: Oct-2020



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	1173	1.32	1179	1.31	1193	1.30									
613.soma_s	OMP	32	8	647	2.47	664	2.41	684	2.34									
618.tealeaf_s	OMP	32	8	3467	0.591	3468	0.591	3455	0.593									
619.clvleaf_s	OMP	32	8	2774	0.595	2772	0.595	2772	0.595									
621.miniswp_s	OMP	32	8	343	3.20	343	3.21	346	3.18									
628.pot3d_s	OMP	32	8	3037	0.552	3040	0.551	3037	0.552									
632.sph_exa_s	OMP	32	8	702	3.27	701	3.28	701	3.28									
634.hpgmgfv_s	OMP	32	8	1357	0.719	1358	0.718	1354	0.720									
635.weather_s	OMP	32	8	1634	1.59	1628	1.60	1625	1.60									

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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
File Server Node: ThinkSystem SR665
Compute Nodes Used: 2
Total Chips: 4
Total Cores: 256
Total Threads: 256
Total Memory: 1 TB
Max. Peak Threads: --

Software Summary

Compiler: Intel C/C++/Fortran Compiler 20.4
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: Not Run
Minimum Peak Ranks: --
Maximum Peak Ranks: --
Max. Peak Threads: --
Min. Peak Threads: --

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 7763
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 up to 3.5 GHz
CPU MHz: 2450
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 512 KB 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: 512 GB (16 x 32 GB 2Rx8 PC4-3200A-R)
Disk Subsystem: 1 x 480 GB 2.5" 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 Gb/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 8.3,
Kernel 4.18.0-193.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

Node Description: ThinkSystem SR665

Hardware

Number of nodes: 1
Uses of the node: Fileserver
Vendor: Lenovo Global Technology
Model: ThinkSystem SR665
CPU Name: AMD EPYC 7763
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 up to 3.5 GHz
CPU MHz: 2450
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 512 KB 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: 512 GB (16 x 32 GB 2Rx8 PC4-3200A-R)
Disk Subsystem: 1 x 480 GB 2.5" 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 Gb/s
Ports Used: 1
Interconnect Type: Nvidia Mellanox ConnectX-6 HDR

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 8.3
Local File System: xfs
Shared File System: N/A
System State: Multi-User, run level 3
Other Software: None



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Interconnect Description: Nvidia Mellanox ConnectX-6 HDR

Hardware

Software

Vendor: Nvidia : --
Model: Nvidia Mellanox ConnectX-6 HDR
Switch Model: QM8700 Series
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

Submit Notes

```
The config file option 'submit' was used.
submit = mpirun ${MPIRUN_OPTS} --allow-run-as-root --oversubscribe
--bind-to numa -map-by numa
-mca coll_hcoll_enable 1 -x HCOLL_ENABLE_NBC=1
-x HCOLL_MAIN_IB=mlx5_0:1 -mca pml ucx
-hostfile /home/HPC2021K35/config/6nodes -npernode 128 -np $ranks $command
```

General Notes

Environment variables set by runhpc before the start of the run:
UCX_MEMTYPE_CACHE = "n"
UCX_TLS = "self,shm,cuda_copy"

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 for applications running on Intel(R) 64,  
Version 19.1.3.304 Build 20200925_000000  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.  
icc: NOTE: The evaluation period for this product ends on 11-may-2021 UTC.  
-----
```

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

```
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.1.3.304 Build 20200925_000000
```

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Compiler Version Notes (Continued)

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
icpc: NOTE: The evaluation period for this product ends on 11-may-2021 UTC.

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

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.1.3.304 Build 20200925_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
ifort: NOTE: The evaluation period for this product ends on 11-may-2021 UTC.

Base Compiler Invocation

C benchmarks:
mpicc

C++ benchmarks:
mpicxx

Fortran benchmarks:
mpifort

Base Portability Flags

613.soma_s: -DSPEC_NO_VAR_ARRAY_REDUCE
621.miniswp_s: -DUSE_KBA -DUSE_ACCELDIR
632.sph_exa_s: -DSPEC_USE_LT_IN_KERNELS

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



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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.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.

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