## SPEChpc™ 2021 Tiny Result

**Lenovo Global Technology**

ThinkSystem SR665 (AMD EPYC 7773X)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Model</th>
<th>Ranks</th>
<th>Threads/Rank</th>
<th>Seconds</th>
<th>Ratio</th>
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</table>

**SPEChpc 2021_tny_base =** 31.1

**SPEChpc 2021_tny_peak =** 31.1

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.
## Lenovo Global Technology

### SPEChpc 2021 Tiny Result

<table>
<thead>
<tr>
<th>License ID</th>
<th>Lenovo Global Technology</th>
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<tbody>
<tr>
<td>Test Date</td>
<td>Jul-2022</td>
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<tr>
<td>Hardware Availability</td>
<td>Jul-2022</td>
</tr>
<tr>
<td>Software Availability</td>
<td>Jul-2022</td>
</tr>
</tbody>
</table>

### SPEChpc 2021 tiny peak = 31.1

### SPEChpc 2021 tiny_base = 31.1

### 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
- **Base Parallel Model:** OMP
- **Base Ranks Run:** 64
- **Base Threads Run:** 8
- **Peak Parallel Models:** OMP
- **Peak Parallel 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
- **Other Software:** None

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Lenovo Global Technology

ThinkSystem SR665 (AMD EPYC 7773X)

SPEChpc 2021 Tiny Result

SPEChpc 2021_tny_base = 31.1
SPEChpc 2021_tny_peak = 31.1

Node Description: ThinkSystem SR665

Hardware (Continued)
Interconnect Type: Nvidia Mellanox ConnectX-6 HDR

Interconnect Description: Nvidia Mellanox ConnectX-6 HDR

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

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  505.lbm_t(base) 513.soma_t(base) 518.tealeaf_t(base) 521.miniswp_t(base) 534.hpgmqf_v_t(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 532.sph_exa_t(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.
==============================================================================

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Lenovo Global Technology
ThinkSystem SR665 (AMD EPYC 7773X)

SPEChpc 2021_tny_base = 31.1
SPEChpc 2021_tny_peak = 31.1

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

Compiler Version Notes (Continued)

FC 519.clvleaf_t(base) 528.pot3d_t(base) 535.weather_t(base)
Intel(R) Fortran 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.

Base Compiler Invocation

C benchmarks:
mpicc

C++ benchmarks:
mpicxx

Fortran benchmarks:
mpifort

Base Portability Flags

513.soma_t: -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:
505.lbm_t: basepeak = yes

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR665 (AMD EPYC 7773X)

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

SPEChpc 2021 tny_base = 31.1
SPEChpc 2021 tny_peak = 31.1

Peak Optimization Flags (Continued)

513.soma_t: basepeak = yes
518.tealeaf_t: basepeak = yes
521.miniswp_t: basepeak = yes
534.hpgmgfv_t: basepeak = yes
532.sph_exa_t: basepeak = yes

C++ benchmarks:

Fortran benchmarks:
519.clvleaf_t: basepeak = yes
528.pot3d_t: basepeak = yes
535.weather_t: basepeak = yes

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

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

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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 03:19:43-0400.
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