# SPEChpc™ 2021 Small Result

Copyright 2021-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

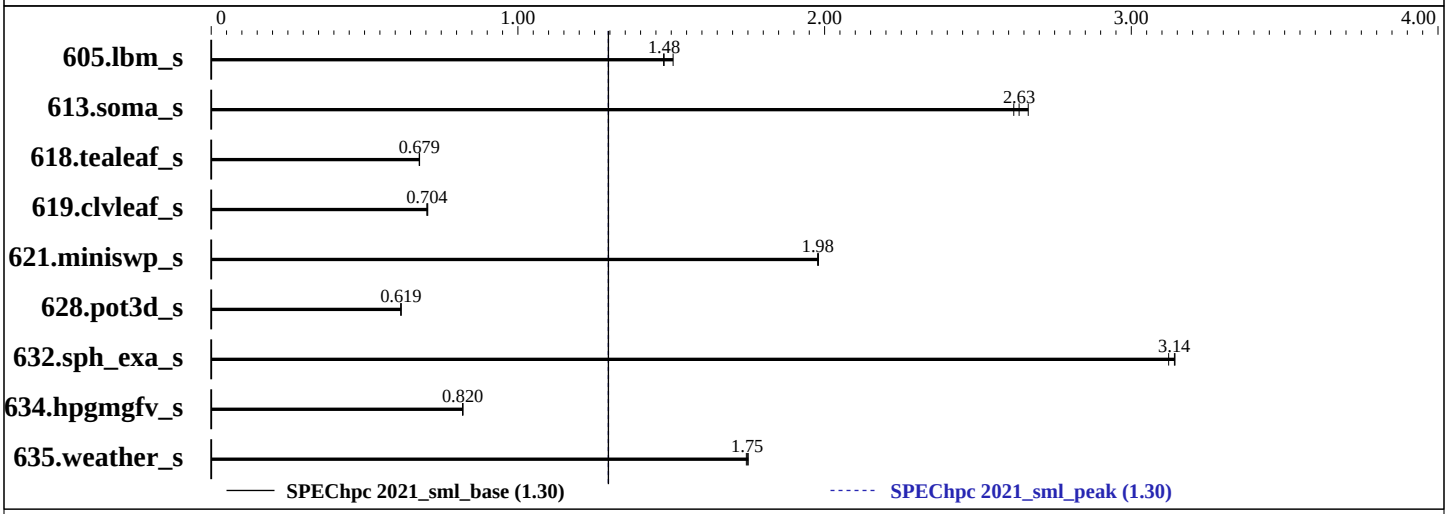
## ThinkSystem SR655 V3 (AMD EPYC 9654P)

SPEChpc 2021_sml_base = 1.30

SPEChpc 2021_sml_peak = 1.30

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

**Test Date:** Jan-2023
**Hardware Availability:** Feb-2023
**Software Availability:** Feb-2023




## 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 | 16 | 1051 | 1.48 | **1050** | **1.48** | 1029 | 1.51 | OMP | 24 | 16 | 1051 | 1.48 | **1050** | **1.48** | 1029 | 1.51 |
| 613.soma_s | OMP | 24 | 16 | **607** | **2.63** | 611 | 2.62 | 601 | 2.66 | OMP | 24 | 16 | **607** | **2.63** | 611 | 2.62 | 601 | 2.66 |
| 618.tealeaf_s | OMP | 24 | 16 | **3021** | **0.679** | 3017 | 0.679 | 3021 | 0.679 | OMP | 24 | 16 | **3021** | **0.679** | 3017 | 0.679 | 3021 | 0.679 |
| 619.clvleaf_s | OMP | 24 | 16 | **2344** | **0.704** | 2337 | 0.706 | 2345 | 0.704 | OMP | 24 | 16 | **2344** | **0.704** | 2337 | 0.706 | 2345 | 0.704 |
| 621.miniswp_s | OMP | 24 | 16 | **556** | **1.98** | 556 | 1.98 | 556 | 1.98 | OMP | 24 | 16 | **556** | **1.98** | 556 | 1.98 | 556 | 1.98 |
| 628.pot3d_s | OMP | 24 | 16 | **2706** | **0.619** | 2709 | 0.618 | 2706 | 0.619 | OMP | 24 | 16 | **2706** | **0.619** | 2709 | 0.618 | 2706 | 0.619 |
| 632.sph_exa_s | OMP | 24 | 16 | 737 | 3.12 | 732 | 3.14 | **732** | **3.14** | OMP | 24 | 16 | 737 | 3.12 | 732 | 3.14 | **732** | **3.14** |
| 634.hpgmgfv_s | OMP | 24 | 16 | 1188 | 0.821 | 1190 | 0.819 | **1189** | **0.820** | OMP | 24 | 16 | 1188 | 0.821 | 1190 | 0.819 | **1189** | **0.820** |
| 635.weather_s | OMP | 24 | 16 | **1487** | **1.75** | 1485 | 1.75 | 1490 | 1.74 | OMP | 24 | 16 | **1487** | **1.75** | 1485 | 1.75 | 1490 | 1.74 |

**SPEChpc 2021_sml_base = 1.30**

**SPEChpc 2021_sml_peak = 1.30**

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

# SPEChpc™ 2021 Small Result

Copyright 2021-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

## ThinkSystem SR655 V3 (AMD EPYC 9654P)

SPEChpc 2021_sml_base = 1.30

SPEChpc 2021_sml_peak = 1.30

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

**Test Date:** Jan-2023
**Hardware Availability:** Feb-2023
**Software Availability:** Feb-2023

### Hardware Summary

| | |
|---|---|
| Type of System: | Homogeneous Cluster |
| Compute Node: | ThinkSystem SR655 V3 |
| Interconnect: | - |
| Compute Nodes Used: | 2 |
| Total Chips: | 2 |
| Total Cores: | 192 |
| Total Threads: | 384 |
| Total Memory: | 1536 GB |
| Max. Peak Threads: | 16 |

### Software Summary

| | |
|---|---|
| Compiler: | Intel oneAPI Compiler 2022.1.0 |
| MPI Library: | Intel MPI Library for Linux OS, Build 20220227 |
| Other MPI Info: | -- |
| Other Software: | -- |
| Base Parallel Model: | OMP |
| Base Ranks Run: | 24 |
| Base Threads Run: | 16 |
| Peak Parallel Models: | OMP |
| Minimum Peak Ranks: | 24 |
| Maximum Peak Ranks: | 24 |
| Max. Peak Threads: | 16 |
| Min. Peak Threads: | 16 |

## Node Description: ThinkSystem SR655 V3

### Hardware

| | |
|---|---|
| Number of nodes: | 2 |
| Uses of the node: | Compute |
| Vendor: | Lenovo Global Technology |
| Model: | ThinkSystem SR655 V3 |
| CPU Name: | AMD EPYC 9654P |
| CPU(s) orderable: | 1 chips |
| Chips enabled: | 1 |
| Cores enabled: | 96 |
| Cores per chip: | 96 |
| Threads per core: | 2 |
| CPU Characteristics: | Max Boost Clock up to 3.7 GHz |
| CPU MHz: | 2400 |
| Primary Cache: | 32 KB I + 32 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<br>32 MB shared / 8 cores |
| Other Cache: | None |
| Memory: | 768 GB (12 x 64 GB 2Rx4 PC5-4800B-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: | - |
| Number of Adapters: | 0 |
| Slot Type: | - |
| Data Rate: | None |
| Ports Used: | 0 |

**(Continued on next page)**

### Software

| | |
|---|---|
| Accelerator Driver: | -- |
| Adapter: | - |
| Adapter Driver: | - |
| Adapter Firmware: | - |
| Operating System: | -- |
| Local File System: | xfs |
| Shared File System: | None |
| System State: | Multi-user, run level 3 |
| Other Software: | None |

## Node Description: ThinkSystem SR655 V3

### Hardware (Continued)

Interconnect Type: -

## Interconnect Description: -

### Hardware

Vendor: None
Model: -
Switch Model: None
Number of Switches: 0
Number of Ports: 0
Data Rate: None
Firmware: N/A
Topology: N/A
Primary Use: -

### Software

: --

## Submit Notes

```
The config file option 'submit' was used.
```

## Compiler Version Notes

```
==============================================================================
 FC  619.clvleaf_s(base) 628.pot3d_s(base) 635.weather_s(base)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version
  2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
ifx: command line error: no files specified; for help type "ifx -help"
------------------------------------------------------------------------------

==============================================================================
 CC  605.lbm_s(base) 613.soma_s(base) 618.tealeaf_s(base) 621.miniswp_s(base)
      634.hpgmgfv_s(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
  Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
clang: warning: -Z-reserved-lib-stdc++: 'linker' input unused
  [-Wunused-command-line-argument]
------------------------------------------------------------------------------

==============================================================================
```

**(Continued on next page)**

## Compiler Version Notes (Continued)

```
 CXXC 632.sph_exa_s(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
  Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
clang: warning: -Z-reserved-lib-stdc++: 'linker' input unused
  [-Wunused-command-line-argument]
------------------------------------------------------------------------------
```

## Base Compiler Invocation

C benchmarks:
`mpiicc -cc=icx`

C++ benchmarks:
`mpiicpc -cxx=icx`

Fortran benchmarks:
`mpiifort  -fc=ifx`

## Base Portability Flags

605.lbm_s: `-lstdc++`
613.soma_s: `-lstdc++ -DSPEC_NO_VAR_ARRAY_REDUCE`
618.tealeaf_s: `-lstdc++`
619.clvleaf_s: `-lstdc++`
621.miniswp_s: `-lstdc++`
628.pot3d_s: `-lstdc++`
632.sph_exa_s: `-lstdc++`
634.hpgmgfv_s: `-lstdc++`
635.weather_s: `-lstdc++`

## Base Optimization Flags

C benchmarks:
`-Ofast -mprefer-vector-width=512 -march=core-avx2 -ipo -fiopenmp -ansi-alias`

C++ benchmarks:
`-Ofast -mprefer-vector-width=512 -march=core-avx2 -ipo -fiopenmp -ansi-alias`

**(Continued on next page)**

## Base Optimization Flags (Continued)

Fortran benchmarks:
`-Ofast -mprefer-vector-width=512 -march=core-avx2 -ipo -fiopenmp -nostandard-realloc-lhs -align array64byte`

## Base Other Flags

C benchmarks:
`-Ispecmpitime`

C++ benchmarks:
`-Ispecmpitime`

Fortran benchmarks:

619.clvleaf_s: `-Ispecmpitime`

## 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`

**(Continued on next page)**

# Peak Optimization Flags (Continued)

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.2022-11-10.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2022-11-10.xml`


SPEChpc is a trademark of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.


For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEChpc2021 v1.1.7 on 2018-06-25 15:12:19-0400.
Report generated on 2023-02-22 12:25:45 by hpc2021 PS formatter v1.0.3.
Originally published on 2023-02-22.