SPEChpc™ 2021 Small Result

Copyright 2021-2025 Standard Performance Evaluation Corporation

Supermicro

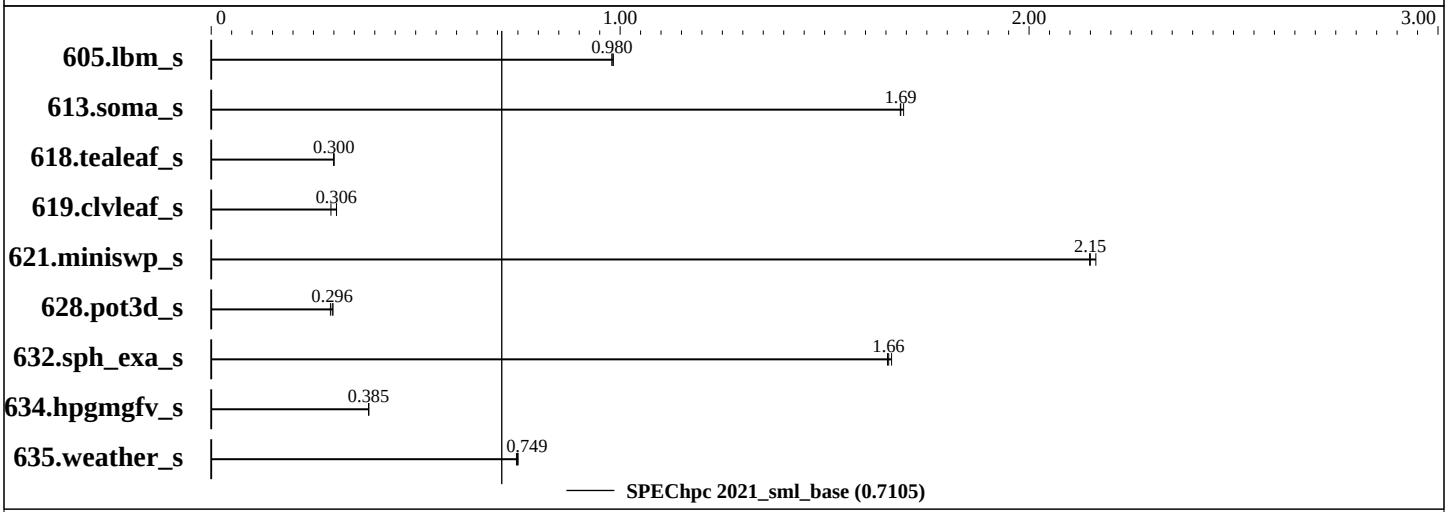
WIO SuperServer SYS-512B-WR
(Intel Xeon 6781P)

SPEChpc 2021_sml_base = 0.7105

SPEChpc 2021_sml_peak = Not Run

hpc2021 License: 6569
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: May-2025
Hardware Availability: Feb-2025
Software Availability: Apr-2025



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	2	80	**1581**	**0.980**	1582	0.980	1576	0.983									
613.soma_s	OMP	2	80	**949**	**1.69**	949	1.69	945	1.69									
618.tealeaf_s	OMP	2	80	6846	0.299	**6832**	**0.300**	6829	0.300									
619.clvleaf_s	OMP	2	80	**5388**	**0.306**	5635	0.293	5384	0.306									
621.miniswp_s	OMP	2	80	**512**	**2.15**	512	2.15	508	2.16									
628.pot3d_s	OMP	2	80	**5660**	**0.296**	5746	0.292	5622	0.298									
632.sph_exa_s	OMP	2	80	**1388**	**1.66**	1391	1.65	1382	1.66									
634.hpgmgfv_s	OMP	2	80	**2533**	**0.385**	2530	0.385	2534	0.385									
635.weather_s	OMP	2	80	**3472**	**0.749**	3464	0.751	3483	0.746									

SPEChpc 2021_sml_base = 0.7105

SPEChpc 2021_sml_peak = Not Run

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

SPEChpc™ 2021 Small Result

Copyright 2021-2025 Standard Performance Evaluation Corporation

Supermicro

WIO SuperServer SYS-512B-WR
(Intel Xeon 6781P)

SPEChpc 2021_sml_base = 0.7105

SPEChpc 2021_sml_peak = Not Run

hpc2021 License: 6569
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: May-2025
Hardware Availability: Feb-2025
Software Availability: Apr-2025

Hardware Summary

Type of System:	Homogenous
Compute Node:	WIO SuperServer SYS-512B-WR
Interconnect:	None
Compute Nodes Used:	1
Total Chips:	1
Total Cores:	80
Total Threads:	160
Total Memory:	512 GB
Total Accelerators:	0
Max. Peak Threads:	--

Software Summary

Compiler:	C/C++/Fortran: Version 2025.1.1 of Intel oneAPI Compiler
MPI Library:	Intel MPI Library for Linux* OS, Version 2021.15 Build 20250213
Other MPI Info:	None
Other Software:	None
Base Parallel Model:	OMP
Base Ranks Run:	2
Base Threads Run:	80
Peak Parallel Models:	Not Run
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--
Max. Peak Threads:	--
Min. Peak Threads:	--

Node Description: WIO SuperServer SYS-512B-WR

Hardware

Number of nodes:	1
Uses of the node:	compute
Vendor:	Supermicro
Model:	WIO SuperServer SYS-512B-WR
CPU Name:	Intel Xeon 6781P
CPU(s) orderable:	1 chip
Chips enabled:	1
Cores enabled:	80
Cores per chip:	80
Threads per core:	2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.8 GHz
CPU MHz:	2000
Primary Cache:	64 KB I + 48 KB D on chip per core
Secondary Cache:	2 MB I+D on chip per core
L3 Cache:	336 MB I+D on chip per chip
Other Cache:	None
Memory:	512 GB (8 x 64 GB 2Rx4 PC5-6400B-R)
Disk Subsystem:	1 x 256 GB M.2 NVMe SSD
Other Hardware:	None
Accel Count:	0
Accel Model:	None
Accel Vendor:	None
Accel Type:	None
Accel Connection:	None
Accel ECC enabled:	None
Accel Description:	None
Adapter:	None
Number of Adapters:	0
Slot Type:	None
Data Rate:	None

(Continued on next page)

Software

Accelerator Driver:	None
Adapter:	None
Adapter Driver:	None
Adapter Firmware:	None
Operating System:	SUSE Linux Enterprise Linux Server 15 SP6 6.4.0-150600.21-default
Local File System:	btrfs
Shared File System:	None
System State:	Multi-user, run level 3
Other Software:	None

Node Description: WIO SuperServer SYS-512B-WR

Hardware (Continued)

Ports Used: 0
Interconnect Type: None

Interconnect Description: None

Hardware

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

Software

: --

Submit Notes

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

General Notes

```
MPI startup command:
  mpirun command (mpiexec) was used to start MPI jobs.
```

Compiler Version Notes

```
==============================================================================
 CXXC 632.sph_exa_s(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler 2025.1.1 (2025.1.1.20250418)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/intel/oneapi/compiler/2025.1/bin/compiler
Configuration file: /opt/intel/oneapi/compiler/2025.1/bin/compiler/../icpx.cfg
------------------------------------------------------------------------------

==============================================================================
 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 2025.1.1 (2025.1.1.20250418)
```

(Continued on next page)

Compiler Version Notes (Continued)

```
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/intel/oneapi/compiler/2025.1/bin/compiler
Configuration file: /opt/intel/oneapi/compiler/2025.1/bin/compiler/../icx.cfg
------------------------------------------------------------------------------

==============================================================================
 FC  619.clvleaf_s(base) 635.weather_s(base)
------------------------------------------------------------------------------
ifx (IFX) 2025.1.1 20250418
Copyright (C) 1985-2025 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
 FC  628.pot3d_s(base)
------------------------------------------------------------------------------
ifx: command line warning #10157: ignoring option '-W'; argument is of wrong
  type
ifx (IFX) 2025.1.1 20250418
Copyright (C) 1985-2025 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`mpiicc -cc=icx`

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

Fortran benchmarks:
`mpiifort -fc=ifx`

Base Portability Flags

605.lbm_s: `-lstdc++`
613.soma_s: `-lstdc++`
618.tealeaf_s: `-lstdc++`
619.clvleaf_s: `-lstdc++`
621.miniswp_s: `-lstdc++`
628.pot3d_s: `-lstdc++`
632.sph_exa_s: `-lstdc++ -std=c++14`
634.hpgmgfv_s: `-lstdc++`

(Continued on next page)

Base Portability Flags (Continued)

635.weather_s: `-lstdc++`

Base Optimization Flags

C benchmarks:
`-O3 -ipo -xCORE-AVX512 -mprefer-vector-width=512 -qopt-multiple-gather-scatter-by-shuffles -ffast-math -flto -funroll-loops -fimf-precision=low:sin,sqrt -fiopenmp -ansi-alias`

C++ benchmarks:
`-O3 -ipo -xCORE-AVX512 -mprefer-vector-width=512 -qopt-multiple-gather-scatter-by-shuffles -ffast-math -flto -funroll-loops -fimf-precision=low:sin,sqrt -fiopenmp -ansi-alias`

Fortran benchmarks:
`-O3 -ipo -xCORE-AVX512 -mprefer-vector-width=512 -qopt-multiple-gather-scatter-by-shuffles -ffast-math -flto -funroll-loops -fimf-precision=low:sin,sqrt -fiopenmp -nostandard-realloc-lhs -align array64byte`

Base Other Flags

C benchmarks:
`-Ispecmpitime -Wno-incompatible-function-pointer-types`

C++ benchmarks:
`-Ispecmpitime -Wno-incompatible-function-pointer-types`

Fortran benchmarks:

619.clvleaf_s: `-Ispecmpitime`

628.pot3d_s: `-Wno-incompatible-function-pointer-types`

635.weather_s: `No flags used`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2025-05-22.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2025-05-22.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 v1.1.9 on 2025-05-28 07:20:11-0400.
Report generated on 2025-06-27 11:25:02 by hpc2021 PS formatter v112.
Originally published on 2025-06-27.