

SPEChpc™ 2021 Tiny Result

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HKUST HPC Infra. Center: Gigabyte AMD 9754

(Test Sponsor: The Hong Kong University of Science and Technology)

Giga Computing R283-ZFx

AMD EPYC 9754 (2 x 128-Core)

SPEChpc 2021_tny_base = 12.4

SPEChpc 2021_tny_peak = Not Run

hpc2021 License: 7401

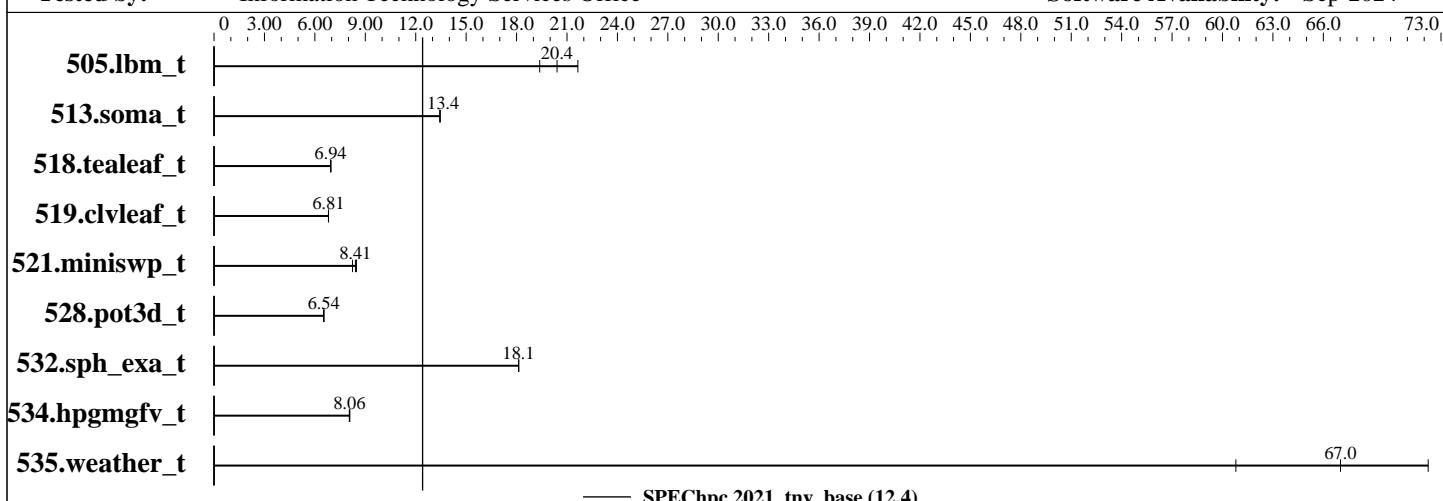
Test Date: Dec-2025

Test Sponsor: The Hong Kong University of Science and Technology

Hardware Availability: Sep-2024

Tested by: Information Technology Services Office

Software Availability: Sep-2024



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
505.lbm_t	MPI	256	1	116	19.4	104	21.6	110	20.4									
513.soma_t	MPI	256	1	275	13.5	275	13.4	275	13.4									
518.tealeaf_t	MPI	256	1	238	6.94	238	6.94	237	6.96									
519.clvleaf_t	MPI	256	1	242	6.81	242	6.81	242	6.81									
521.miniswp_t	MPI	256	1	189	8.47	194	8.24	190	8.41									
528.pot3d_t	MPI	256	1	325	6.54	326	6.52	325	6.54									
532.sph_exat	MPI	256	1	108	18.1	108	18.1	108	18.1									
534.hpgmfv_t	MPI	256	1	146	8.05	145	8.08	146	8.06									
535.weather_t	MPI	256	1	48.1	67.0	53.0	60.8	44.6	72.2									

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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:	SMP
Compute Node:	Giga Computing R283-ZFx (AMD EPYC 9754)
Interconnect:	Cisco Nexus 9332D-GX2B
Compute Nodes Used:	1
Total Chips:	2
Total Cores:	256
Total Threads:	512
Total Memory:	1536 GB
Total Accelerators:	0
Max. Peak Threads:	--

Software Summary

Compiler:	Intel(R) oneAPI DPC++/C++ Compiler 2025.0.4.20241205
MPI Library:	Intel(R) MPI Library for Linux* OS 2021.14.20250213-0d7f579
Other MPI Info:	--
Other Software:	--
Base Parallel Model:	MPI
Base Ranks Run:	256
Base Threads Run:	1
Peak Parallel Models:	Not Run
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--
Max. Peak Threads:	--
Min. Peak Threads:	--

Node Description: Giga Computing R283-ZFx (AMD EPYC 9754)

Hardware

Number of nodes:	1
Uses of the node:	Compute
Vendor:	Gigabyte Technology
Model:	R283-ZFx
CPU Name:	AMD EPYC 9754
CPU(s) orderable:	2 chips
Chips enabled:	2
Cores enabled:	256
Cores per chip:	128
Threads per core:	2
CPU Characteristics:	Base 2.25 GHz, Boost up to 3.1 GHz
CPU MHz:	2250
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	256 MB I+D on chip per chip 16 MB shared / 8 cores
Other Cache:	None
Memory:	1536 GB (24 x 64 GB DDR5-4800 at 4800MHz)
Disk Subsystem:	BROADCOM MR9560-8i (2TB)
Other Hardware:	Immersion Cooling (Direct Liquid Cooling)
Accel Count:	--
Accel Model:	--
Accel Vendor:	--
Accel Type:	--
Accel Connection:	--
Accel ECC enabled:	--
Accel Description:	--
Adapter:	Mellanox ConnectX-6 HDR MT28908
Number of Adapters:	1
Slot Type:	PCIe 4.0 x16

Software

Accelerator Driver:	None
Adapter:	Mellanox ConnectX-6 HDR MT28908
Adapter Driver:	24.10-2.1.8.0
Adapter Firmware:	20.41.1000
Operating System:	Rocky Linux 9.5 5.14.0-503.40.1.el9_5.x86_64
Local File System:	-
Shared File System:	tmpfs
System State:	Dell OneFS via NFS v3
Other Software:	Run level 5

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Node Description: Giga Computing R283-ZFx (AMD EPYC 9754)

Hardware (Continued)

Data Rate: 200 Gbit/s

Ports Used: 1

Interconnect Type: RoCE v2

Interconnect Description: Cisco Nexus 9332D-GX2B

Hardware

Vendor: Cisco

Model: Cisco Nexus 9332D-GX2B

Switch Model: RoCE v2 Ethernet Switch

Number of Switches:

Number of Ports: 32

Data Rate: 400 Gbit/s

Firmware: --

Topology: --

Primary Use: MPI & RDMA Traffic, NFS

Software

: --

Submit Notes

The config file option 'submit' was used.

mpirun -genval -np \${ranks} numactl -l \$command

General Notes

Environment variables set by runhpc before the start of the run:

I_MPI_PIN = "1"

I_MPI_PIN_PROCESSOR_LIST = "all"

I_MPI_PIN_RESPECT_CPUSSET = "1"

I_MPI_PIN_RESPECT_HCA = "0"

Compiler Version Notes

=====

CXXC 532.sph_exa_t(base)

=====

Intel(R) oneAPI DPC++/C++ Compiler 2025.0.4 (2025.0.4.20241205)

Target: x86_64-unknown-linux-gnu

Thread model: posix

InstalledDir:

/opt/shared/.spack-edge/opt/spack/linux-rocky9-x86_64_v4/gcc-11.5.0.spack/intel-oneapi-compilers-2025.0.4-sn26au2eyxigpsati3gb5oxmtku6s5uo/compiler/2025.0/bin/compiler

Configuration file:

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Compiler Version Notes (Continued)

/opt/shared/.spack-edge/opt/spack/linux-rocky9-x86_64_v4/gcc-11.5.0.spack/intel-oneapi-compilers-2025.0.4-sn26au2eyxigpsati3gb5oxmtku6s5uo/compiler/2025.0/bin/compiler/..icpx.cfg

=====
CC 505.lbm_t(base) 513.soma_t(base) 518.tealeaf_t(base) 521.miniswp_t(base)
534.hpgmfv_t(base)

Intel(R) oneAPI DPC++/C++ Compiler 2025.0.4 (2025.0.4.20241205)

Target: x86_64-unknown-linux-gnu

Thread model: posix

InstalledDir:

/opt/shared/.spack-edge/opt/spack/linux-rocky9-x86_64_v4/gcc-11.5.0.spack/intel-oneapi-compilers-2025.0.4-sn26au2eyxigpsati3gb5oxmtku6s5uo/compiler/2025.0/bin/compiler
Configuration file:

/opt/shared/.spack-edge/opt/spack/linux-rocky9-x86_64_v4/gcc-11.5.0.spack/intel-oneapi-compilers-2025.0.4-sn26au2eyxigpsati3gb5oxmtku6s5uo/compiler/2025.0/bin/compiler/..icx.cfg

=====
FC 519.clvleaf_t(base) 528.pot3d_t(base) 535.weather_t(base)

ifx (IFX) 2025.0.4 20241205

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Base Compiler Invocation

C benchmarks:

mpiicc -cc=icx

C++ benchmarks:

mpiicpc -cxx=icpx

Fortran benchmarks:

mpiifort -fc=ifx

Base Portability Flags

505.lbm_t: -lstdc++
513.soma_t: -lstdc++
518.tealeaf_t: -lstdc++
521.miniswp_t: -lstdc++
532.sph_exa_t: -std=c++14 -lstdc++
534.hpgmfv_t: -lstdc++

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Base Optimization Flags

C benchmarks:

```
-march=common-avx512 -Ofast -flto -ffast-math  
-mprefer-vector-width=512 -ansi-alias
```

C++ benchmarks:

```
-march=common-avx512 -Ofast -flto -ffast-math  
-mprefer-vector-width=512 -ansi-alias
```

Fortran benchmarks:

```
-march=common-avx512 -Ofast -flto -ffast-math  
-mprefer-vector-width=512 -nostandard-realloc-lhs -align array64byte
```

Base Other Flags

C benchmarks:

```
-Wno-incompatible-function-pointer-types
```

C++ benchmarks:

```
-Wno-incompatible-function-pointer-types
```

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

Tested with SPEChpc2021 v1.1.10 on 2025-12-23 06:04:52+0800.

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