SPEChpc™ 2021 Tiny Result

Information Technology Services Office, HKUST

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

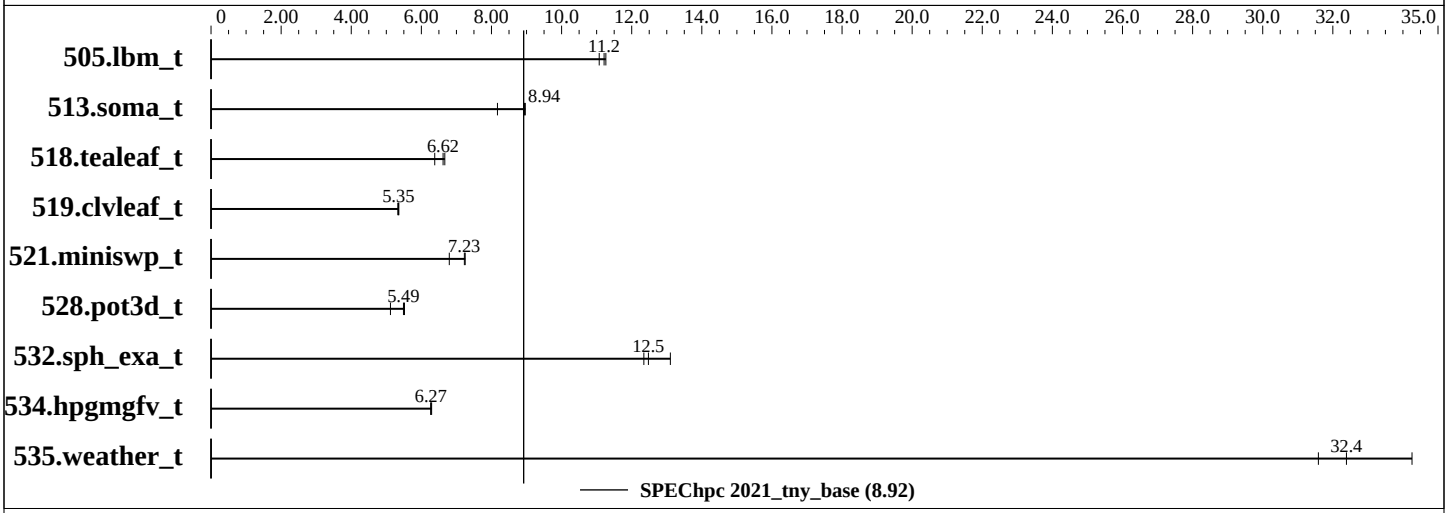
HPC4 - Intel Xeon 8592+ (Dual Socket)
Dell PowerEdge R660

SPEChpc 2021_tny_base = 8.92

SPEChpc 2021_tny_peak = Not Run

hpc2021 License: 7401
Test Sponsor: The Hong Kong University of Science and Technology
Tested by: Information Technology Services Office

Test Date: Jan-2026
Hardware Availability: Sep-2024
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	128	1	**201**	**11.2**	200	11.3	203	11.1									
513.soma_t	MPI	128	1	413	8.97	453	8.17	**414**	**8.94**									
518.tealeaf_t	MPI	128	1	247	6.67	259	6.38	**249**	**6.62**									
519.clvleaf_t	MPI	128	1	**308**	**5.35**	308	5.36	310	5.33									
521.miniswp_t	MPI	128	1	221	7.25	235	6.80	**221**	**7.23**									
528.pot3d_t	MPI	128	1	**387**	**5.49**	385	5.52	415	5.12									
532.sph_exa_t	MPI	128	1	149	13.1	158	12.3	**156**	**12.5**									
534.hpgmgfv_t	MPI	128	1	187	6.29	187	6.27	**187**	**6.27**									
535.weather_t	MPI	128	1	94.1	34.3	102	31.6	**99.6**	**32.4**									

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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:	DELL PowerEdge R660 (Intel Xeon 8592+)
Interconnect:	Cisco Nexus 9332D-GX2B
Compute Nodes Used:	1
Total Chips:	2
Total Cores:	128
Total Threads:	128
Total Memory:	512 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:	128
Base Threads Run:	1
Peak Parallel Models:	Not Run
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--
Max. Peak Threads:	--
Min. Peak Threads:	--

Node Description: DELL PowerEdge R660 (Intel Xeon 8592+)

Hardware

Number of nodes:	1
Uses of the node:	Compute
Vendor:	Dell Inc.
Model:	PowerEdge R660
CPU Name:	INTEL(R) XEON(R) PLATINUM 8592+
CPU(s) orderable:	2 chips
Chips enabled:	2
Cores enabled:	128
Cores per chip:	64
Threads per core:	1
CPU Characteristics:	1.9 - 3.0 GHz, HT Disabled
CPU MHz:	1900
Primary Cache:	32 KB I + 48 KB D on chip per core
Secondary Cache:	2 MB I+D on chip per core
L3 Cache:	320 MB I+D on chip per chip
	None
Other Cache:	None
Memory:	512 GB (16 x 32 GB DDR5-5200 at 5200MHz)
Disk Subsystem:	DELL PERC H355 Front (4TB)
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

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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:	tmpfs
Shared File System:	Dell OneFS via NFS v3
System State:	Run level 5
Other Software:	None

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Test Date: Jan-2026
Hardware Availability: Sep-2024
Software Availability: Sep-2024

Node Description: DELL PowerEdge R660 (Intel Xeon 8592+)

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 -genvall -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_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:
  /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
```

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Compiler Version Notes (Continued)

```
------------------------------------------------------------------------------

==============================================================================
 CC  505.lbm_t(base) 513.soma_t(base) 518.tealeaf_t(base) 521.miniswp_t(base)
     534.hpgmgfv_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
Copyright (C) 1985-2024 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

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.hpgmgfv_t: `-lstdc++`

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
```


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

Tested with SPEChpc2021 v1.1.10 on 2026-01-14 17:46:06+0800.
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