



SPEChpc™ 2021 Tiny Result

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Intel

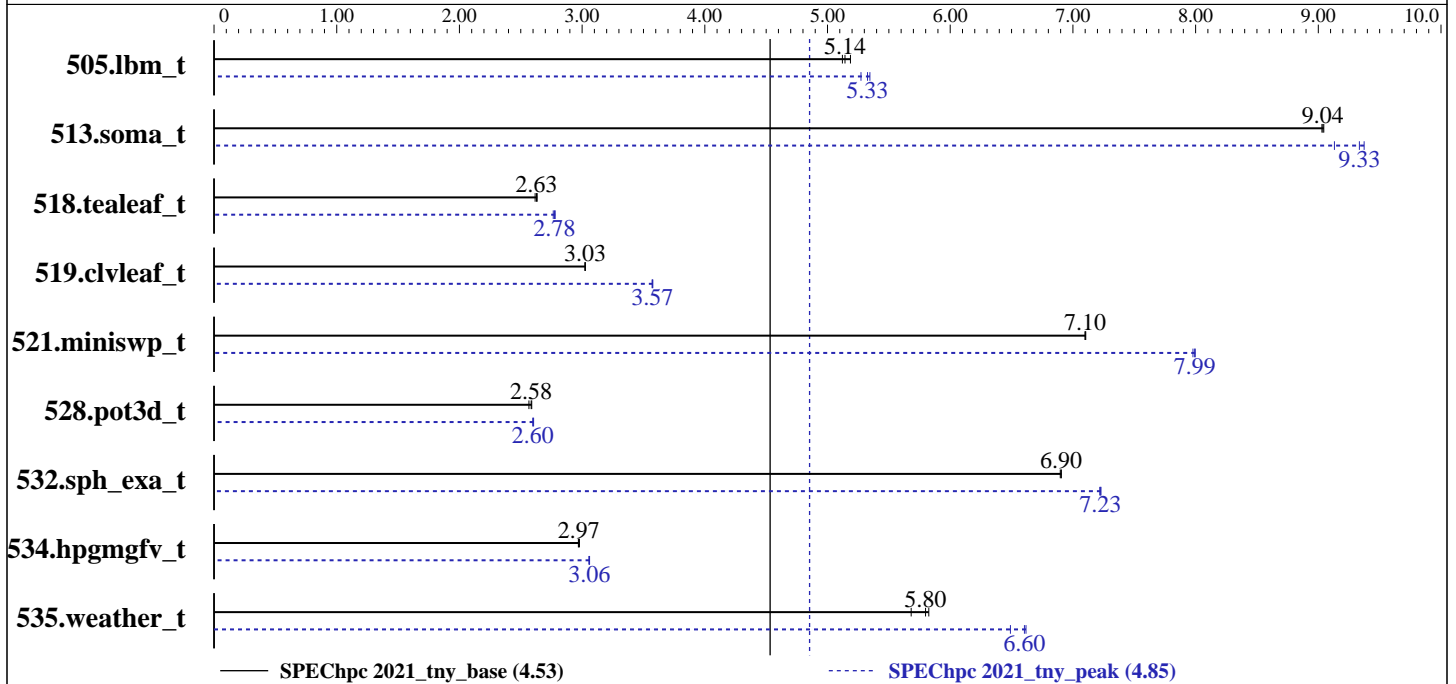
SPEChpc 2021_tny_base = 4.53

SPEChpc 2021_tny_peak = 4.85

Endeavour: Intel Server M50CYP2UR208 (Intel Xeon Platinum 8360Y)

hpc2021 License: 13
Test Sponsor: Intel
Tested by: Intel

Test Date: Sep-2021
Hardware Availability: Jul-2021
Software Availability: Jul-2021



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	OMP	12	12	434	5.19	438	5.14	439	5.12	OMP	4	36	427	5.27	421	5.35	422	5.33
513.soma_t	OMP	12	12	410	9.03	409	9.04	409	9.04	OMP	2	72	405	9.13	395	9.37	396	9.33
518.tealeaf_t	OMP	12	12	627	2.63	628	2.63	630	2.62	OMP	8	9	595	2.78	597	2.76	593	2.78
519.clvleaf_t	OMP	12	12	546	3.02	545	3.03	545	3.03	OMP	18	4	462	3.57	462	3.57	461	3.58
521.miniswp_t	OMP	12	12	225	7.10	225	7.10	225	7.10	OMP	4	36	200	7.99	201	7.98	200	8.00
528.pot3d_t	OMP	12	12	828	2.57	821	2.59	822	2.58	OMP	8	9	816	2.60	817	2.60	818	2.60
532.sph_exa_t	OMP	12	12	282	6.90	283	6.90	282	6.91	OMP	18	4	270	7.23	270	7.22	270	7.23
534.hpgmgfv_t	OMP	12	12	395	2.98	396	2.97	395	2.97	OMP	8	18	384	3.06	384	3.06	385	3.06
535.weather_t	OMP	12	12	554	5.83	568	5.68	556	5.80	OMP	18	4	488	6.60	487	6.62	497	6.49

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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: Homogenous Cluster
Compute Node: Intel Server M50CYP2UR208 (Xeon 8360Y)
Interconnect: Mellanox HDR
File Server Node: LustreFS
Compute Nodes Used: 1
Total Chips: 2
Total Cores: 72
Total Threads: 144
Total Memory: 256 GB
Max. Peak Threads: 72

Software Summary

Compiler: Intel oneAPI Compiler 2021.3.0
MPI Library: Intel MPI Library for Linux* OS, Version 2021.2 Build 20210302
Other MPI Info: None
Other Software: None
Base Parallel Model: OMP
Base Ranks Run: 12
Base Threads Run: 12
Peak Parallel Models: OMP
Minimum Peak Ranks: 2
Maximum Peak Ranks: 18
Max. Peak Threads: 72
Min. Peak Threads: 4

Node Description: Intel Server M50CYP2UR208 (Xeon 8360Y)

Hardware

Number of nodes: 1
Uses of the node: Compute
Vendor: Intel
Model: Intel Server M50CYP2UR208 (Xeon 8360Y)
CPU Name: Intel Xeon Platinum 8360Y
CPU(s) orderable: 1, 2 chips
Chips enabled: 2
Cores enabled: 72
Cores per chip: 36
Threads per core: 2
CPU Characteristics: Turbo Boost Technology up to 3.5 GHz
CPU MHz: 2400
Primary Cache: 32 KB I + 48 KB D on chip per core
Secondary Cache: 1536 KB I+D on chip per core
L3 Cache: 54 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx8 PC4-3200R)
Disk Subsystem: 1 x 960 GB SATA 2.5" SSD
Other Hardware: None
Accel Count: None
Accel Model: --
Accel Vendor: None
Accel Type: None
Accel Connection: None
Accel ECC enabled: None
Accel Description: None
Adapter: Mellanox ConnectX-6 HDR
Number of Adapters: 1
Slot Type: PCI-Express 4.0 x16
Data Rate: 200Gbit/s
Ports Used: 1

Software

Accelerator Driver: --
Adapter: Mellanox ConnectX-6 HDR
Adapter Driver: 5.1-2.5.8.0
Adapter Firmware: 20.29.2002
Operating System: CentOS Linux release 8.4.2105
4.18.0-240.22.1.el8_3.crt2.x86_64
Local File System: NFS
Shared File System: Lustre FS
System State: Multi-user
Other Software: --

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Software Availability: Jul-2021

Node Description: Intel Server M50CYP2UR208 (Xeon 8360Y)

Hardware (Continued)

Interconnect Type: Mellanox HDR

Node Description: LustreFS

Hardware

Number of nodes: 1
Uses of the node: Fileserver
Vendor: Intel
Model: Inspur NF5280M5
CPU Name: Intel Xeon Gold 6244
CPU(s) orderable: 1-2 chips
Chips enabled: 2
Cores enabled: 16
Cores per chip: 8
Threads per core: 2
CPU Characteristics: Intel Xeon Gold
CPU MHz: 3600
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 512 KB I+D on chip per core
L3 Cache: 25344 KB I+D on chip per chip
Other Cache: None
Memory: 192 GB (12 x 16 GB 2Rx8 PC4-2666R)
Disk Subsystem: 1 x 1 TB 12 Gbps SAS 2.5" SSD
Other Hardware: None
Accel Count: --
Accel Model: --
Accel Vendor: --
Accel Type: --
Accel Connection: --
Accel ECC enabled: --
Accel Description: --
Adapter: Mellanox ConnectX-4 EDR
Number of Adapters: 1
Slot Type: PCI-Express 4.0 x16
Data Rate: 100 Gb/s
Ports Used: 2
Interconnect Type: Mellanox EDR

Software

Accelerator Driver: --
Adapter: Mellanox ConnectX-4 EDR
Adapter Driver: 5.1-2.5.8.0
Adapter Firmware: 20.29.2002
Operating System: CentOS Linux release 7.8.2003
4.18.0-240.22.1.el8_3.crt2.x86_64
Local File System: None
Shared File System: Lustre FS
System State: Multi-User
Other Software: None



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Interconnect Description: Mellanox HDR

Hardware

Software

Vendor: Mellanox
Model: Mellanox HDR
Switch Model: Mellanox MQM8790-HS2F Quantum HDR InfiniBand Switch
Number of Switches: 18
Number of Ports: 40
Data Rate: 200 Gbit/s
Firmware: 20.29.2002
Topology: Fat-tree
Primary Use: MPI Traffic

: --

Submit Notes

The config file option 'submit' was used.

Compiler Version Notes

```
=====  
CC 505.lbm_t(base, peak) 513.soma_t(base, peak) 518.tealeaf_t(base, peak)  
521.miniswp_t(base, peak) 534.hpgmgfv_t(base, peak)  
-----
```

```
Intel(R) oneAPI DPC++/C++ Compiler 2021.3.0 (2021.3.0.20210619)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir:  
/global/panfs01/admin/opt/intel/oneAPI/2021.3.0.3219/compiler/2021.3.0/linux/bin  
-----
```

```
=====  
CXXC 532.sph_exa_t(base, peak)  
-----
```

```
Intel(R) oneAPI DPC++/C++ Compiler 2021.3.0 (2021.3.0.20210619)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir:  
/global/panfs01/admin/opt/intel/oneAPI/2021.3.0.3219/compiler/2021.3.0/linux/bin  
-----
```

```
=====  
FC 519.clvleaf_t(base, peak) 528.pot3d_t(base, peak) 535.weather_t(base,  
peak)  
-----
```

ifx (IFORT) 2021.3.0 Beta 20210619
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Compiler Version Notes (Continued)

Base Compiler Invocation

C benchmarks:

```
mpiicc -cc=icx -lstdc++(*)
```

C++ benchmarks:

```
mpiicpc -cxx=icx -lstdc++(*)
```

Fortran benchmarks:

```
mpiifort -fc=ifx -lstdc++(*)
```

(*) Indicates a compiler flag that was found in a non-compiler variable.

Base Portability Flags

```
513.soma_t: -DSPEC_NO_VAR_ARRAY_REDUCE
```

Base Optimization Flags

C benchmarks:

```
-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp  
-ansi-alias
```

C++ benchmarks:

```
-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp  
-ansi-alias
```

Fortran benchmarks:

```
-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -fiopenmp  
-nostandard-realloc-lhs -align array64byte
```

Peak Compiler Invocation

C benchmarks:

```
mpiicc -cc=icx -lstdc++(*)
```

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Peak Compiler Invocation (Continued)

C++ benchmarks:

```
mpiicpc -cxx=icx -lstdc++(*)
```

Fortran benchmarks:

```
mpiifort -fc=ifx -lstdc++(*)
```

(*) Indicates a compiler flag that was found in a non-compiler variable.

Peak Portability Flags

```
513.soma_t: -DSPEC_NO_VAR_ARRAY_REDUCE
```

Peak Optimization Flags

C benchmarks:

```
505.lbm_t: -Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512  
-fiopenmp -ansi-alias
```

```
513.soma_t: Same as 505.lbm_t
```

```
518.tealeaf_t: Same as 505.lbm_t
```

```
521.miniswp_t: Same as 505.lbm_t
```

```
534.hpgmgfv_t: -Ofast -ipo -fiopenmp -ansi-alias
```

C++ benchmarks:

```
-Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512 -ffast-math  
-fiopenmp -ansi-alias
```

Fortran benchmarks:

```
519.clvleaf_t: -Ofast -ipo -xCORE-AVX512  
-mllvm -hir-nontemporal-cacheline-count=0 -fiopenmp  
-nostandard-realloc-lhs -align array64byte
```

```
528.pot3d_t: -Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512  
-fiopenmp -nostandard-realloc-lhs -align array64byte
```

```
535.weather_t: Same as 519.clvleaf_t
```



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

<http://www.spec.org/hpc2021/flags/Intel-oneAPI-icx2021-official-linux64.html>

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

<http://www.spec.org/hpc2021/flags/Intel-oneAPI-icx2021-official-linux64.xml>

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

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