



SPEChpc™ 2021 Medium Result

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Intel

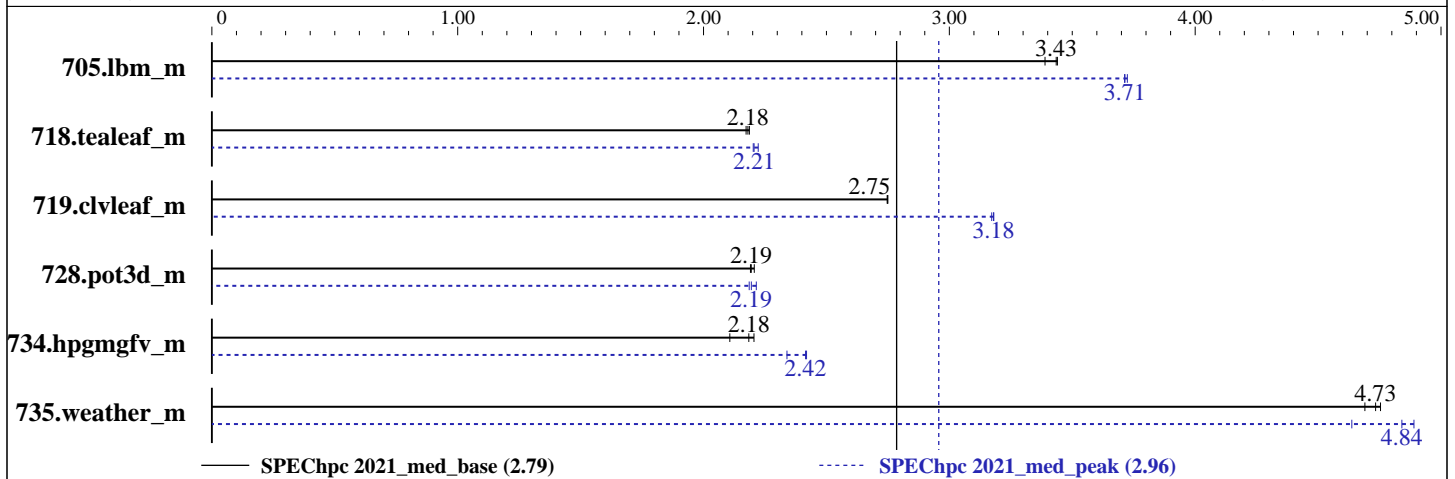
SPEChpc 2021_med_base = 2.79

SPEChpc 2021_med_peak = 2.96

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		
705.lbm_m	OMP	1152	4	361	3.39	357	3.43	356	3.44	OMP	256	36	330	3.71	330	3.71	329	3.72
718.tealeaf_m	OMP	1152	4	617	2.19	621	2.17	619	2.18	OMP	512	9	613	2.20	612	2.21	607	2.22
719.clvleaf_m	OMP	1152	4	673	2.75	673	2.75	673	2.75	OMP	384	12	582	3.18	582	3.18	583	3.17
728.pot3d_m	OMP	1152	4	838	2.21	843	2.19	844	2.19	OMP	1152	4	835	2.21	843	2.19	846	2.19
734.hpgmgfv_m	OMP	1152	4	458	2.18	453	2.21	475	2.11	OMP	512	18	414	2.42	413	2.42	427	2.34
735.weather_m	OMP	1152	4	505	4.75	507	4.73	512	4.69	OMP	1152	4	518	4.64	496	4.84	491	4.89

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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: 64
Total Chips: 128
Total Cores: 4608
Total Threads: 9216
Total Memory: 16 TB
Max. Peak Threads: 36

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: 1152
Base Threads Run: 4
Peak Parallel Models: OMP
Minimum Peak Ranks: 256
Maximum Peak Ranks: 1152
Max. Peak Threads: 36
Min. Peak Threads: 4

Node Description: Intel Server M50CYP2UR208 (Xeon 8360Y)

Hardware

Number of nodes: 64
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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Software Availability: Jul-2021

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 705.lbm_m(base, peak) 718.tealeaf_m(base, peak) 734.hpgmgfv_m(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 719.clvleaf_m(base, peak) 728.pot3d_m(base, peak) 735.weather_m(base,  
peak)  
-----
```

```
ifx (IFORT) 2021.3.0 Beta 20210619  
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.  
-----
```

Base Compiler Invocation

C benchmarks:
mpicc -cc=icx -lstdc++(*)

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Base Compiler Invocation (Continued)

Fortran benchmarks:

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

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

Base Optimization Flags

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++(*)
```

Fortran benchmarks:

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

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

Peak Optimization Flags

C benchmarks:

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

```
718.tealeaf_m: Same as 705.lbm_m
```

```
734.hpgmgfv_m: -Ofast -ipo -fiopenmp -ansi-alias
```

Fortran benchmarks:

```
719.clvleaf_m: -Ofast -ipo -xCORE-AVX512  
-mllvm -hir-nontemporal-cacheline-count=0 -fiopenmp
```

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Peak Optimization Flags (Continued)

719.clvleaf_m (continued):

-nostandard-realloc-lhs -align array64byte

728.pot3d_m: -Ofast -ipo -xCORE-AVX512 -mprefer-vector-width=512

-fiopenmp -nostandard-realloc-lhs -align array64byte

735.weather_m: Same as 719.clvleaf_m

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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