



# SPEChpc™ 2021 Medium Result

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## Intel

SPEChpc 2021\_med\_base = 11.7

Endeavour: Intel Server D50DNP1SBB (Xeon Max 9480)

SPEChpc 2021\_med\_peak = Not Run

hpc2021 License: 13

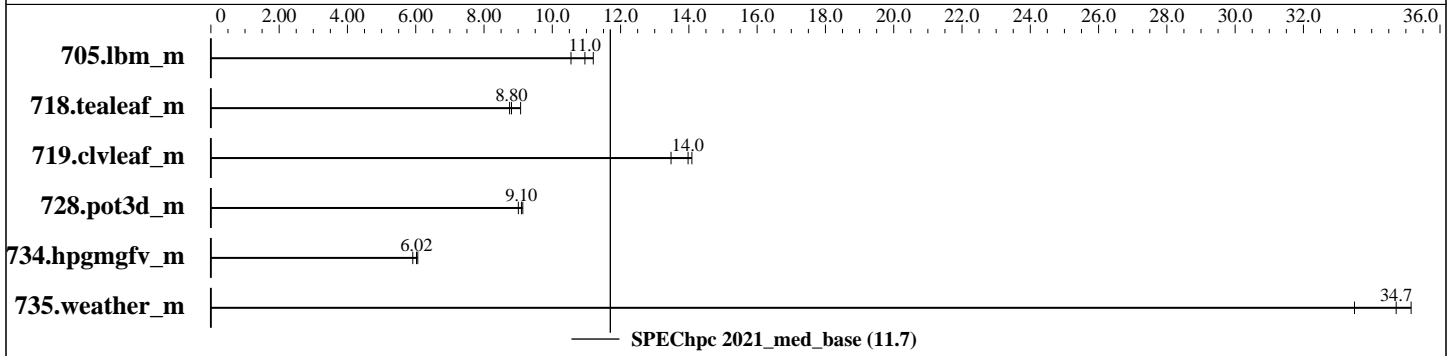
Test Date: Jun-2024

Test Sponsor: Intel

Hardware Availability: Jan-2023

Tested by: Intel

Software Availability: Mar-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
705.lbm_m	OMP	1536	7	116	10.5	<b>112</b>	<b>11.0</b>	109	11.2									
718.tealeaf_m	OMP	1536	7	149	9.07	154	8.75	<b>153</b>	<b>8.80</b>									
719.clvleaf_m	OMP	1536	7	131	14.1	<b>132</b>	<b>14.0</b>	137	13.5									
728.pot3d_m	OMP	1536	7	202	9.14	<b>203</b>	<b>9.10</b>	205	9.01									
734.hpgmgfv_m	OMP	1536	7	169	5.91	<b>166</b>	<b>6.02</b>	165	6.06									
735.weather_m	OMP	1536	7	71.7	33.5	<b>69.1</b>	<b>34.7</b>	68.3	35.2									

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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: Homogenous Cluster  
Compute Node: Intel Server D50DNP1SBB (Xeon Max 9480)  
Interconnect: Mellanox HDR  
Compute Nodes Used: 96  
Total Chips: 192  
Total Cores: 10752  
Total Threads: 21504  
Total Memory: 60 TB  
Max. Peak Threads: --

### Software Summary

Compiler: Intel oneAPI Compiler 2024.1.0  
MPI Library: Intel MPI Library 2021.12 for Linux OS  
Other MPI Info: None  
Other Software: None  
Base Parallel Model: OMP  
Base Ranks Run: 1536  
Base Threads Run: 7  
Peak Parallel Models: Not Run  
Minimum Peak Ranks: --  
Maximum Peak Ranks: --  
Max. Peak Threads: --  
Min. Peak Threads: --

### Node Description: Intel Server D50DNP1SBB (Xeon Max 9480)

#### Hardware

Number of nodes: 96  
Uses of the node: Compute  
Vendor: Intel  
Model: Intel Server D50DNP1SBB (Xeon Max 9480)  
CPU Name: Intel Xeon Max 9480  
CPU(s) orderable: 1, 2 chips  
Chips enabled: 2  
Cores enabled: 112  
Cores per chip: 56  
Threads per core: 2  
CPU Characteristics: Turbo Boost Technology up to 3.5 GHz  
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: 112.5 MB I+D on chip per chip  
Other Cache: None  
Memory: 640 GB (16 x 32GB 2Rx8 PC5-4800B-R + 8 x 16GB HBM2 3200 MT/s)  
Disk Subsystem: 1 x 1 TB NVMe U.2 2.5" SSD  
Other Hardware: None  
Accel Count: None  
Accel Model: None  
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: None  
Adapter: Mellanox ConnectX-6 HDR  
Adapter Driver: 23.04-0.5.3  
Adapter Firmware: 20.37.1014  
Operating System: Rocky Linux 8.8 (Green Obsidian) 4.18.0-477.15.1.el8\_8.x86\_64  
Local File System: xfs  
Shared File System: PANASAS FS  
System State: Run level 5  
Other Software: None

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### Node Description: Intel Server D50DNP1SBB (Xeon Max 9480)

#### Hardware (Continued)

Interconnect Type: Mellanox HDR

### Interconnect Description: Mellanox HDR

#### Hardware

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: 20.36.1010  
Topology: Fat-tree  
Primary Use: MPI Traffic

#### Software

: --

### Submit Notes

The config file option 'submit' was used.

### General Notes

The PANASAS filesystem as described on this result page was formerly generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC HPG Policy document, <http://www.spec.org/hpg/policy.html>

HBM is configured as HBM cache mode.

### Compiler Version Notes

=====  
CC 705.lbm\_m(base) 718.tealeaf\_m(base) 734.hpgmgfv\_m(base)  
=====

Intel(R) oneAPI DPC++/C++ Compiler 2024.1.0 (2024.1.0.20240308)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir:  
/global/panfs05/admin5/opt/intel/oneAPI/2024.1.0/compiler/2024.1/bin/compiler  
Configuration file:  
/global/panfs05/admin5/opt/intel/oneAPI/2024.1.0/compiler/2024.1/bin/compiler/./icx.cfg

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## Compiler Version Notes (Continued)

=====  
FC 719.clvleaf\_m(base) 728.pot3d\_m(base) 735.weather\_m(base)  
=====

ifx (IFX) 2024.1.0 20240308

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=====

## Base Compiler Invocation

C benchmarks:

mpiicc -cc=icx

Fortran benchmarks:

mpiifort -fc=ifx

## Base Portability Flags

705.lbm\_m: -lstdc++ -std=c++14  
718.tealeaf\_m: -lstdc++ -std=c++14  
734.hpgmgfv\_m: -lstdc++ -std=c++14

## Base Optimization Flags

C benchmarks:

-O3 -Ofast -xCORE-AVX512 -mprefer-vector-width=512  
-qopt-multiple-gather-scatter-by-shuffles -fiopenmp -ffast-math -flto  
-funroll-loops

Fortran benchmarks:

-O3 -Ofast -xCORE-AVX512 -mprefer-vector-width=512  
-qopt-multiple-gather-scatter-by-shuffles -fiopenmp -ffast-math -flto  
-funroll-loops -nostandard-realloc-lhs -align array64byte

## Base Other Flags

C benchmarks:

-Wno-incompatible-function-pointer-types



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The flags files that were used to format this result can be browsed at

<http://www.spec.org/hpc2021/flags/HBM.html>  
[http://www.spec.org/hpc2021/flags/Intel\\_compiler\\_flags.2024-12-11.html](http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2024-12-11.html)

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/hpc2021/flags/HBM.xml>  
[http://www.spec.org/hpc2021/flags/Intel\\_compiler\\_flags.2024-12-11.xml](http://www.spec.org/hpc2021/flags/Intel_compiler_flags.2024-12-11.xml)

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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

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