



SPEChpc™ 2021 Medium Result

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NEC Corporation
(Test Sponsor: RWTH Aachen University)

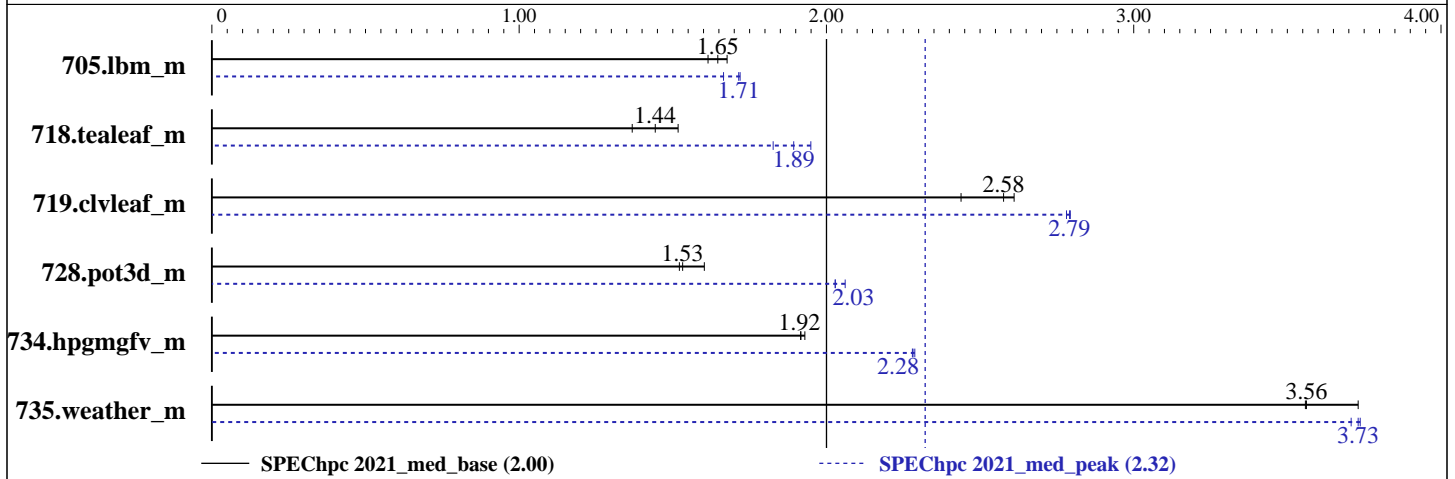
SPEChpc 2021_med_base = 2.00

SPEChpc 2021_med_peak = 2.32

CLAIX-2018: Intel Compute Module HNS2600BPM (Intel Xeon Platinum 8160)

hpc2021 License: 055A
Test Sponsor: RWTH Aachen University
Tested by: RWTH Aachen University

Test Date: Sep-2021
Hardware Availability: Nov-2018
Software Availability: Sep-2020



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	MPI	4800	1	744	1.65	759	1.61	731	1.68	MPI	4800	1	736	1.67	713	1.72	715	1.71
718.tealeaf_m	MPI	4800	1	890	1.52	936	1.44	987	1.37	MPI	4400	1	713	1.89	739	1.83	693	1.95
719.clvleaf_m	MPI	4800	1	709	2.61	759	2.44	718	2.58	MPI	4400	1	662	2.79	663	2.79	665	2.78
728.pot3d_m	MPI	4800	1	1154	1.60	1208	1.53	1216	1.52	MPI	4400	1	912	2.03	898	2.06	912	2.03
734.hpgmgfv_m	MPI	4800	1	518	1.93	522	1.92	522	1.92	MPI	4400	1	439	2.28	437	2.29	438	2.28
735.weather_m	MPI	4800	1	643	3.73	674	3.56	674	3.56	MPI	4800	1	642	3.74	647	3.71	643	3.73

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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
Compute Node: Intel HNS2600BPB
Interconnect: Intel Omni-Path 100 Series
Compute Nodes Used: 100
Total Chips: 200
Total Cores: 4800
Total Threads: 4800
Total Memory: 19200 GB
Max. Peak Threads: 1

Software Summary

Compiler: C/C++/Fortran:
Intel Compilers for Linux 2021.3.0
MPI Library: Intel MPI Library for Linux 2018.4.274
Other MPI Info: None
Other Software: None
Base Parallel Model: MPI
Base Ranks Run: 4800
Base Threads Run: 1
Peak Parallel Models: MPI
Minimum Peak Ranks: 4400
Maximum Peak Ranks: 4800
Max. Peak Threads: 1
Min. Peak Threads: 1

Node Description: Intel HNS2600BPB

Hardware

Number of nodes: 100
Uses of the node: compute
Vendor: Intel Corporation
Model: Intel Compute Module HNS2600BPB
CPU Name: Intel Xeon Platinum 8160
CPU(s) orderable: 1-2 chips
Chips enabled: 2
Cores enabled: 48
Cores per chip: 24
Threads per core: 1
CPU Characteristics: Intel Turbo Boost Technology up to 3.7 GHz
CPU MHz: 2100
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 1 MB I+D on chip per core
L3 Cache: 33 MB I+D on chip per chip
Other Cache: None
Memory: 192 GB (12 x 16 GB 2RX4 PC4-2666V-R)
Disk Subsystem: Intel SSDSC2KG48, 480GB, SATA
Other Hardware: None
Accel Count: --
Accel Model: --
Accel Vendor: --
Accel Type: --
Accel Connection: --
Accel ECC enabled: --
Accel Description: --
Adapter: Omni-Path HFI Silicon 100 Series
Number of Adapters: 1
Slot Type: PCI Express Gen3 x16
Data Rate: 100Gbits/s
Ports Used: 1

Software

Accelerator Driver: --
Adapter: Omni-Path HFI Silicon 100 Series
Adapter Driver: ib_ipoib 1.0.0
Adapter Firmware: 1.27.0
Operating System: CentOS Linux release 7.9.2009
Local File System: xfs
Shared File System: 1.4 PB NFS (Concat EMC Isilon X410) over Omni-Path
System State: Multi-user, run level 3
Other Software: None

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Node Description: Intel HNS2600BPB

Hardware (Continued)

Interconnect Type: Omni-Path

Interconnect Description: Intel Omni-Path 100 Series

Hardware

Vendor: Intel
Model: Edge Switch 100 Series
Switch Model: BI 100 Series 48 Port 2
PSU
Number of Switches: 48
Number of Ports: 48
Data Rate: 100 Gb/s
Firmware: 10.8.2.0.6
Topology: Fat tree
Primary Use: MPI Traffic

Software

: --

Submit Notes

The config file option 'submit' was used.
MPI startup command:
srun command was used to start MPI jobs

General Notes

The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.
The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

This benchmark result is intended to provide perspective on past performance using the historical hardware and/or software described on this result page.

The system 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>

This measured result may not be representative of the result

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General Notes (Continued)

that would be measured were this benchmark run with hardware and software available as of the publication date.

Compiler Version Notes

```
=====  
CC 705.lbm_m(base, peak) 718.tealeaf_m(base, peak) 734.hpgmgfv_m(base,  
peak)  
=====
```

```
-----  
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)  
64, Version 2021.3.0 Build 20210609_000000  
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.  
icc: warning #10013: no objects specified for multi-file optimization  
GNU ld version 2.27-44.base.el7  
/lib/../lib64/crt1.o: In function `_start':  
(.text+0x20): undefined reference to `main'  
-----
```

```
=====  
FC 719.clvleaf_m(base, peak) 728.pot3d_m(base, peak) 735.weather_m(base,  
peak)  
=====
```

```
-----  
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on  
Intel(R) 64, Version 2021.3.0 Build 20210609_000000  
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.  
ifort: warning #10013: no objects specified for multi-file optimization  
GNU ld version 2.27-44.base.el7  
/rwthfs/rz/SW/intel/oneAPI/2021.3/compiler/2021.3.0/linux/bin/intel64/../../compiler/lib/intel64_lin/for_main.o:  
In function `main':  
for_main.c:(.text+0x2e): undefined reference to `MAIN__'  
-----
```

Base Compiler Invocation

C benchmarks:
mpicc

Fortran benchmarks:
mpiifort



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Base Optimization Flags

C benchmarks:

-O3 -ansi-alias -ipo

Fortran benchmarks:

-O3 -ipo -no-prec-div

Peak Compiler Invocation

C benchmarks:

mpicc

Fortran benchmarks:

mpifort

Peak Optimization Flags

C benchmarks:

-O3 -ansi-alias -ipo

Fortran benchmarks:

-O3 -ipo -no-prec-div

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

<http://www.spec.org/hpc2021/flags/RWTH-Aachen-CLAIX.html>

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

<http://www.spec.org/hpc2021/flags/RWTH-Aachen-CLAIX.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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