



# SPEChpc™ 2021 Small Result

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NEC Corporation  
(Test Sponsor: RWTH Aachen University)

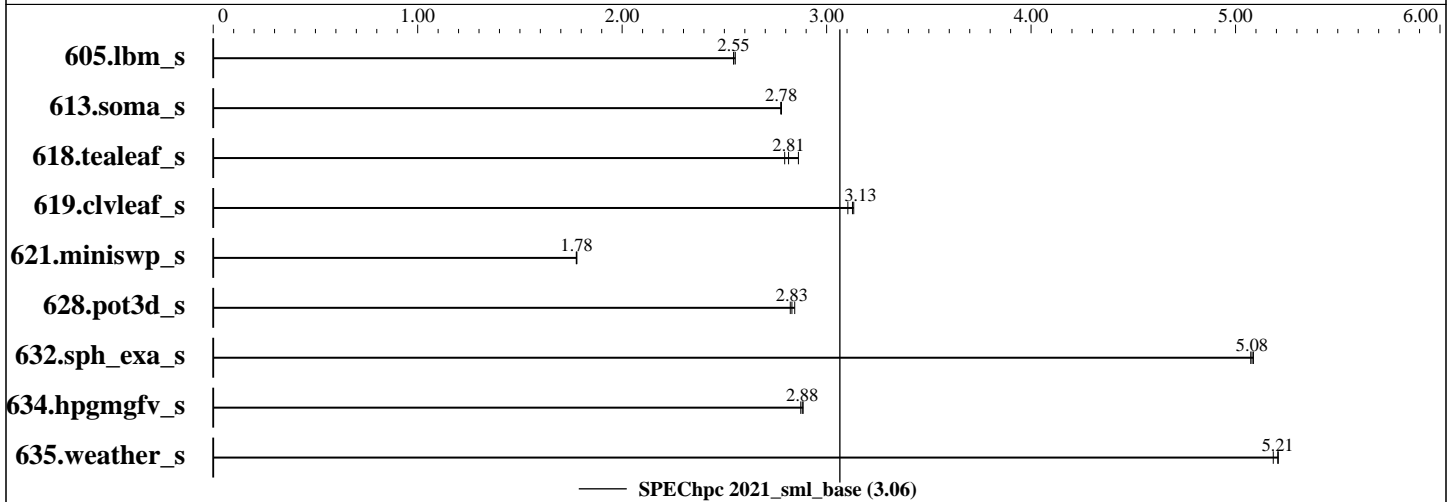
SPEChpc 2021\_sml\_base = 3.06

SPEChpc 2021\_sml\_peak = Not Run

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	Seconds	Ratio
605.lbm_s	MPI	768	1	607	2.55	<b>609</b>	<b>2.55</b>	609	2.55									
613.soma_s	MPI	768	1	576	2.78	576	2.78	<b>576</b>	<b>2.78</b>									
618.tealeaf_s	MPI	768	1	<b>729</b>	<b>2.81</b>	716	2.86	733	2.80									
619.clvleaf_s	MPI	768	1	527	3.13	532	3.10	<b>528</b>	<b>3.13</b>									
621.miniswp_s	MPI	768	1	619	1.78	619	1.78	<b>619</b>	<b>1.78</b>									
628.pot3d_s	MPI	768	1	<b>592</b>	<b>2.83</b>	589	2.84	593	2.82									
632.sph_exa_s	MPI	768	1	453	5.07	<b>453</b>	<b>5.08</b>	452	5.09									
634.hpgmgfv_s	MPI	768	1	<b>338</b>	<b>2.88</b>	338	2.89	339	2.87									
635.weather_s	MPI	768	1	499	5.21	<b>499</b>	<b>5.21</b>	501	5.18									

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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: 16  
Total Chips: 32  
Total Cores: 768  
Total Threads: 768  
Total Memory: 3 TB  
Max. Peak Threads: --

### 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: 768  
Base Threads Run: 1  
Peak Parallel Models: Not Run  
Minimum Peak Ranks: --  
Maximum Peak Ranks: --  
Max. Peak Threads: --  
Min. Peak Threads: --

## Node Description: Intel HNS2600BPB

### Hardware

Number of nodes: 16  
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>

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## General Notes (Continued)

This measured result may not be representative of the result that would be measured were this benchmark run with hardware and software available as of the publication date.

## Compiler Version Notes

=====  
CC 605.lbm\_s(base) 613.soma\_s(base) 618.tealeaf\_s(base) 621.miniswp\_s(base)  
634.hpgmgfv\_s(base)  
=====

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'  
=====

=====  
CXXC 632.sph\_exa\_s(base)  
=====

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.  
icpc: 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 619.clvleaf\_s(base) 628.pot3d\_s(base) 635.weather\_s(base)  
=====

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\_\_'  
=====



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## Base Compiler Invocation

C benchmarks:  
mpiicc

C++ benchmarks:  
mpiicpc

Fortran benchmarks:  
mpiifort

## Base Portability Flags

613.soma\_s: -DSPEC\_NO\_VAR\_ARRAY\_REDUCE

## Base Optimization Flags

C benchmarks:  
-O3 -ansi-alias -ipo

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](mailto:info@spec.org).

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