# SPEChpc™ 2021 Tiny Result

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## NEC Corporation

(Test Sponsor: RWTH Aachen University)

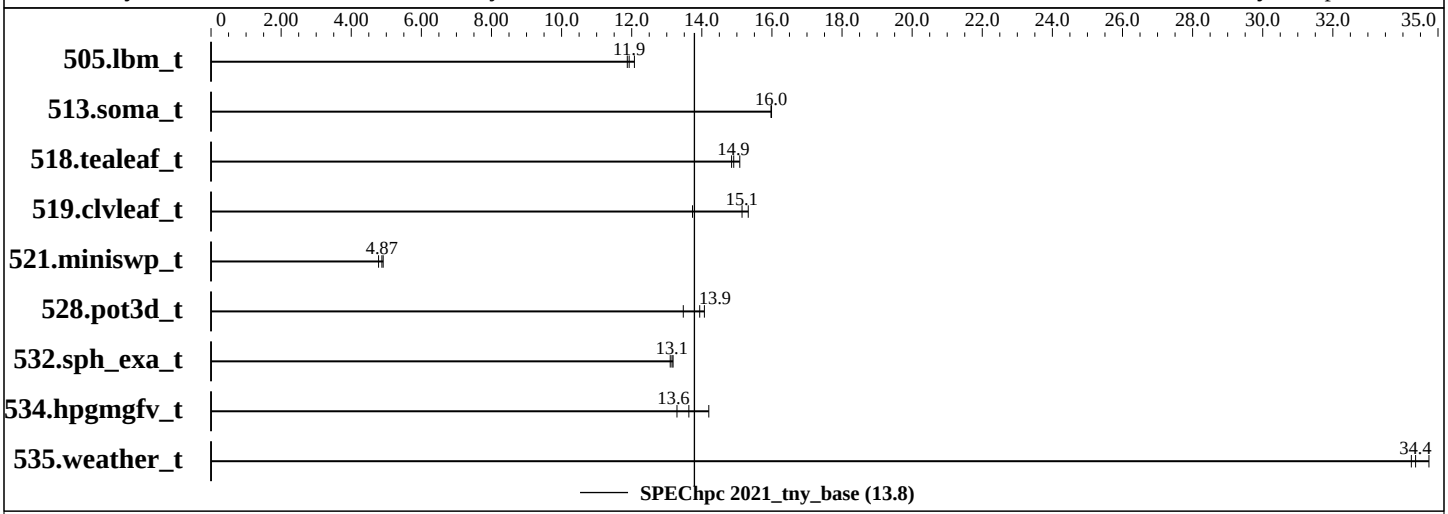
CLAIX-2018: Intel Compute Module HNS2600BPM (Intel Xeon Platinum 8160)

SPEChpc 2021_tny_base = 13.8

SPEChpc 2021_tny_peak = Not Run

**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 |
| 505.lbm_t | MPI | 384 | 1 | 189 | 11.9 | 186 | 12.1 | **189** | **11.9** | | | | | | | | | |
| 513.soma_t | MPI | 384 | 1 | **231** | **16.0** | 232 | 16.0 | 231 | 16.0 | | | | | | | | | |
| 518.tealeaf_t | MPI | 384 | 1 | 111 | 14.8 | 109 | 15.1 | **111** | **14.9** | | | | | | | | | |
| 519.clvleaf_t | MPI | 384 | 1 | **109** | **15.1** | 108 | 15.3 | 120 | 13.7 | | | | | | | | | |
| 521.miniswp_t | MPI | 384 | 1 | **328** | **4.87** | 326 | 4.91 | 335 | 4.78 | | | | | | | | | |
| 528.pot3d_t | MPI | 384 | 1 | 158 | 13.5 | 151 | 14.1 | **152** | **13.9** | | | | | | | | | |
| 532.sph_exa_t | MPI | 384 | 1 | 149 | 13.1 | 148 | 13.2 | **148** | **13.1** | | | | | | | | | |
| 534.hpgmgfv_t | MPI | 384 | 1 | 82.8 | 14.2 | **86.2** | **13.6** | 88.4 | 13.3 | | | | | | | | | |
| 535.weather_t | MPI | 384 | 1 | 94.2 | 34.2 | 92.8 | 34.7 | **93.9** | **34.4** | | | | | | | | | |

SPEChpc 2021_tny_base = 13.8

SPEChpc 2021_tny_peak = Not Run

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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

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

### Hardware Summary

| | |
|---|---|
| Type of System: | Homogenous |
| Compute Node: | Intel HNS2600BPB |
| Interconnect: | Intel Omni-Path 100 Series |
| Compute Nodes Used: | 8 |
| Total Chips: | 16 |
| Total Cores: | 384 |
| Total Threads: | 384 |
| Total Memory: | 1536 GB |
| 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: | 384 |
| 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: | 8 |
| 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 |

**(Continued on next page)**

### 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 |

## 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
```

**(Continued on next page)**

## 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  505.lbm_t(base) 513.soma_t(base) 518.tealeaf_t(base) 521.miniswp_t(base)
     534.hpgmgfv_t(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 532.sph_exa_t(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  519.clvleaf_t(base) 528.pot3d_t(base) 535.weather_t(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__'
------------------------------------------------------------------------------
```

## Base Compiler Invocation

C benchmarks:
`mpiicc`

C++ benchmarks:
`mpiicpc`

Fortran benchmarks:
`mpiifort`

## Base Portability Flags

513.soma_t: `-DSPEC_NO_VAR_ARRAY_REDUCE`
521.miniswp_t: `-DUSE_KBA -DUSE_ACCELDIR`
532.sph_exa_t: `-DSPEC_USE_LT_IN_KERNELS`

## 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.

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