



# SPEChpc™ 2021 Small Result

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## Transtec

(Test Sponsor: Helmholtz-Zentrum Dresden - Rossendorf)

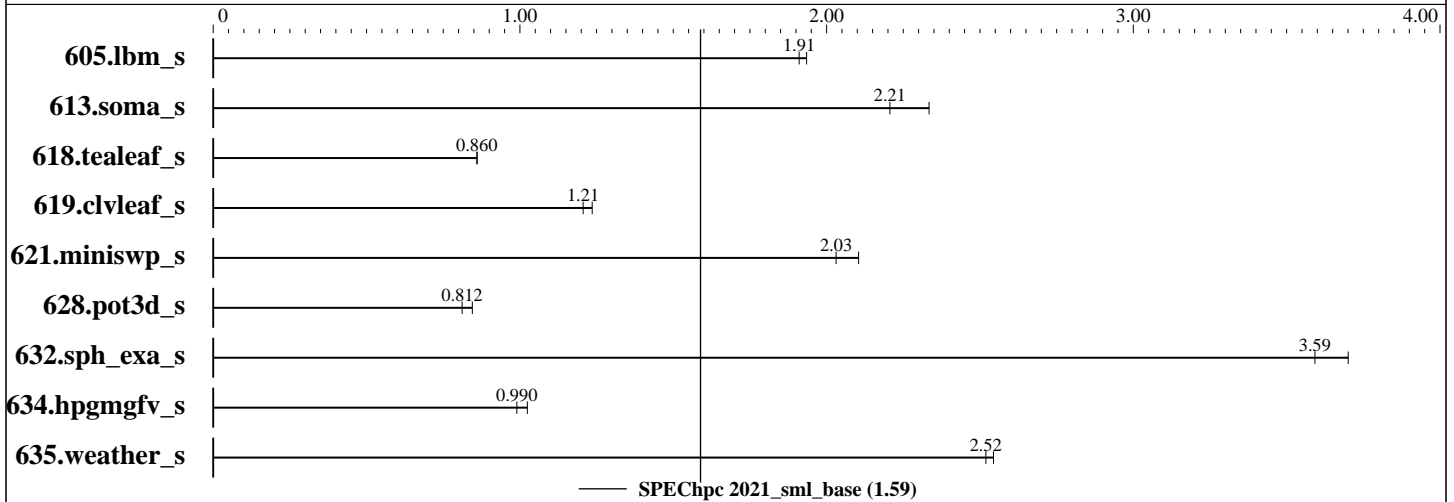
SPEChpc 2021\_sml\_base = 1.59

SPEChpc 2021\_sml\_peak = Not Run

Hemera: Intel Server Board S2600BPB (Intel Xeon Gold 6148)

**hpc2021 License:** 065A  
**Test Sponsor:** Helmholtz-Zentrum Dresden - Rossendorf  
**Tested by:** Helmholtz-Zentrum Dresden - Rossendorf

**Test Date:** Sep-2021  
**Hardware Availability:** Jul-2017  
**Software Availability:** Oct-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	OMP	16	20	801	1.93	<b>811</b>	<b>1.91</b>												
613.soma_s	OMP	16	20	<b>725</b>	<b>2.21</b>	685	2.33												
618.tealeaf_s	OMP	16	20	<b>2385</b>	<b>0.860</b>	2382	0.861												
619.clvleaf_s	OMP	16	20	<b>1368</b>	<b>1.21</b>	1335	1.24												
621.miniswp_s	OMP	16	20	<b>542</b>	<b>2.03</b>	523	2.10												
628.pot3d_s	OMP	16	20	<b>2063</b>	<b>0.812</b>	1983	0.845												
632.sph_exa_s	OMP	16	20	<b>640</b>	<b>3.59</b>	621	3.70												
634.hpgmgfv_s	OMP	16	20	<b>985</b>	<b>0.990</b>	952	1.02												
635.weather_s	OMP	16	20	<b>1032</b>	<b>2.52</b>	1022	2.54												

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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: Compute Node  
Interconnect: Infiniband (EDR)  
Compute Nodes Used: 8  
Total Chips: 16  
Total Cores: 320  
Total Threads: 640  
Total Memory: 3 TB  
Max. Peak Threads: --

## Software Summary

Compiler: Intel Parallel Studio XE 2020  
MPI Library: --  
Other MPI Info: --  
Other Software: None  
Base Parallel Model: OMP  
Base Ranks Run: 16  
Base Threads Run: 20  
Peak Parallel Models: Not Run  
Minimum Peak Ranks: --  
Maximum Peak Ranks: --  
Max. Peak Threads: --  
Min. Peak Threads: --

## Node Description: Compute Node

### Hardware

Number of nodes: 8  
Uses of the node: compute  
Vendor: Intel  
Model: Intel Server Board S2600BPB  
CPU Name: Intel Xeon Gold 6148  
CPU(s) orderable: 1 or 2 per node  
Chips enabled: 2  
Cores enabled: 40  
Cores per chip: 20  
Threads per core: 2  
CPU Characteristics: Intel Turbo Boost Technology up to 3.7 GHz  
CPU MHz: 2400  
Primary Cache: 32 KB I + 32 KB D on chip per core  
Secondary Cache: 1 MB I+D on chip per core  
L3 Cache: 28160 KB I+D on chip per chip  
Other Cache: None  
Memory: 384 GB (12 x 32GB 2Rx4 PC4-2666V-RB2-12)  
Disk Subsystem: 1 x 500 GB SSD  
Other Hardware: None  
Accel Count: 0  
Accel Model: --  
Accel Vendor: --  
Accel Type: --  
Accel Connection: --  
Accel ECC enabled: --  
Accel Description: --  
Adapter: Mellanox MT4115  
Number of Adapters: 2  
Slot Type: PCI-Express 3.0 x16  
Data Rate: 100 Gb/s  
Ports Used: 2  
Interconnect Type: EDR Infiniband

### Software

Accelerator Driver: --  
Adapter: Mellanox MT4115  
Adapter Driver: --  
Adapter Firmware: 12.28.2006  
Operating System: CentOS Linux release 7.9.2009 (Core)  
3.10.0-1160.6.1.el7.x86\_64  
Local File System: xfs  
Shared File System: GPFS Version 5.0.5.0  
6 NSD (vendor: NEC)  
5 building blocks (vendor: NetApp):  
2x (240 x 8 TB HDD)  
1x (180 x 12 TB HDD)  
1x (240 x 16 TB HDD)  
1x (120 x 16 TB HDD)  
System State: Multi-user, run level 3  
Other Software: None



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## Interconnect Description: Infiniband (EDR)

### Hardware

Vendor: Mellanox Technologies  
 Model: Mellanox SB7790  
 Switch Model: 36 x EDR 100 Gb/s  
 Number of Switches: 2  
 Number of Ports: 36  
 Data Rate: 100 Gb/s  
 Firmware: --  
 Topology: Mesh (blocking factor: 8:1)  
 Primary Use: MPI Traffic, GPFS

### Software

: --

## Submit Notes

The config file option 'submit' was used.

MPI startup command:

```
mpiexec.hydra --bind-to socket -np $ranks $command
```

## General Notes

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 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)
-----
```

icc (ICC) 19.1.3.304 20200925

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## Compiler Version Notes (Continued)

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

icpc (ICC) 19.1.3.304 20200925  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.  
-----

=====  
FC 619.clvleaf\_s(base) 628.pot3d\_s(base) 635.weather\_s(base)  
-----

ifort (IFORT) 19.1.3.304 20200925  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.  
-----

## Base Compiler Invocation

C benchmarks:

mpiicc

C++ benchmarks:

mpiicpc

Fortran benchmarks:

mpiifort

## Base Portability Flags

605.lbm\_s: -DSPEC\_LP64  
613.soma\_s: -DSPEC\_LP64 -DSPEC\_NO\_VAR\_ARRAY\_REDUCE  
618.tealeaf\_s: -DSPEC\_LP64  
619.clvleaf\_s: -DSPEC\_LP64  
621.miniswp\_s: -DUSE\_KBA -DUSE\_ACCELDIR -DSPEC\_LP64  
628.pot3d\_s: -DSPEC\_LP64  
632.sph\_exa\_s: -DSPEC\_USE\_LT\_IN\_KERNELS -DSPEC\_LP64  
634.hpgmgfv\_s: -DSPEC\_LP64  
635.weather\_s: -DSPEC\_LP64

## Base Optimization Flags

C benchmarks:

-Ofast -xCORE-AVX512 -qopenmp -ansi-alias

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## Base Optimization Flags (Continued)

C++ benchmarks:

-Ofast -xCORE-AVX512 -qopenmp -ansi-alias

Fortran benchmarks:

-Ofast -xCORE-AVX512 -qopenmp

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

[http://www.spec.org/hpc2021/flags/EM64T\\_Intel\\_flags.html](http://www.spec.org/hpc2021/flags/EM64T_Intel_flags.html)

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

[http://www.spec.org/hpc2021/flags/EM64T\\_Intel\\_flags.xml](http://www.spec.org/hpc2021/flags/EM64T_Intel_flags.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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