# SPEC® CPU2017 Floating Point Speed Result

## Huawei

Huawei 5288 V5 (Intel Xeon Gold 5215M)

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<tr>
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<td>Huawei</td>
<td>Apr-2019</td>
<td>Apr-2019</td>
<td>Dec-2018</td>
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</tbody>
</table>

**Threads**

- 603.bwaves_s | 0, 15.0, 35.0, 55.0, 75.0, 95.0, 110, 125, 140, 155, 170, 200, 215, 230, 245, 260, 275, 290, 305, 320, 335, 350, 375, 376 |
- 607.cactuBSSN_s | 0, 15.0, 35.0, 55.0, 75.0, 95.0, 110, 125, 140, 155, 170, 200, 215, 230, 245, 260, 275, 290, 305, 320, 335, 350, 375 |
- 619.tmf_s | 0, 15.0, 35.0, 55.0, 75.0, 95.0, 110, 125, 140, 155, 170, 200, 215, 230, 245, 260, 275, 290, 305, 320, 335, 350, 375 |
- 621.wrf_s | 0, 15.0, 35.0, 55.0, 75.0, 95.0, 110, 125, 140, 155, 170, 200, 215, 230, 245, 260, 275, 290, 305, 320, 335, 350, 375 |
- 627.cam4_s | 0, 15.0, 35.0, 55.0, 75.0, 95.0, 110, 125, 140, 155, 170, 200, 215, 230, 245, 260, 275, 290, 305, 320, 335, 350, 375 |
- 628.pop2_s | 0, 15.0, 35.0, 55.0, 75.0, 95.0, 110, 125, 140, 155, 170, 200, 215, 230, 245, 260, 275, 290, 305, 320, 335, 350, 375 |
- 638.imagick_s | 0, 15.0, 35.0, 55.0, 75.0, 95.0, 110, 125, 140, 155, 170, 200, 215, 230, 245, 260, 275, 290, 305, 320, 335, 350, 375 |
- 644.nab_s | 0, 15.0, 35.0, 55.0, 75.0, 95.0, 110, 125, 140, 155, 170, 200, 215, 230, 245, 260, 275, 290, 305, 320, 335, 350, 375 |
- 649.fotonik3d_s | 0, 15.0, 35.0, 55.0, 75.0, 95.0, 110, 125, 140, 155, 170, 200, 215, 230, 245, 260, 275, 290, 305, 320, 335, 350, 375 |
- 654.roms_s | 0, 15.0, 35.0, 55.0, 75.0, 95.0, 110, 125, 140, 155, 170, 200, 215, 230, 245, 260, 275, 290, 305, 320, 335, 350, 375 |

---

**Hardware**

- CPU Name: Intel Xeon Gold 5215M
- Max MHz.: 3400
- Nominal: 2500
- Enabled: 20 cores, 2 chips
- Orderable: 1, 2 chips
- Cache L1: 32 KB I + 32 KB D on chip per core
- Cache L2: 1 MB I+D on chip per core
- Cache L3: 13.75 MB I+D on chip per chip
- Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R, running at 2666)
- Storage: 1 x 1200 GB SAS, 10000 RPM
- Other: None

**Software**

- OS: SUSE Linux Enterprise Server 12 SP4 (x86_64)
- Compiler: C/C++: Version 19.0.1.144 of Intel C/C++ Compiler Build 20181018 for Linux;
  Fortran: Version 19.0.1.144 of Intel Fortran Compiler Build 20181018 for Linux
- Parallel: Yes
- Firmware: Version 6.52 Released Mar-2019
- File System: xfs
- System State: Run level 3 (multi-user)
- Base Pointers: 64-bit
- Peak Pointers: Not Applicable
- Other: None
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### Results Table

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<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
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<tr>
<td>603.bwaves_s</td>
<td>20</td>
<td>159</td>
<td>372</td>
<td>159</td>
<td>371</td>
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<td>371</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>20</td>
<td><strong>171</strong></td>
<td><strong>97.6</strong></td>
<td>171</td>
<td>97.4</td>
<td>171</td>
<td>97.7</td>
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<tr>
<td>619.lbm_s</td>
<td>20</td>
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<td>74.8</td>
<td>70.0</td>
<td><strong>74.8</strong></td>
<td>70.0</td>
<td><strong>74.8</strong></td>
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<tr>
<td>621.wrf_s</td>
<td>20</td>
<td><strong>155</strong></td>
<td><strong>85.1</strong></td>
<td>156</td>
<td>84.8</td>
<td>155</td>
<td>85.1</td>
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<tr>
<td>627.cam4_s</td>
<td>20</td>
<td>169</td>
<td>52.4</td>
<td>169</td>
<td>52.3</td>
<td><strong>169</strong></td>
<td><strong>52.4</strong></td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>20</td>
<td><strong>192</strong></td>
<td><strong>61.9</strong></td>
<td>194</td>
<td>61.1</td>
<td>190</td>
<td>62.6</td>
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<tr>
<td>638.imagick_s</td>
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<td>217</td>
<td>66.4</td>
<td>217</td>
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<td>217</td>
<td><strong>66.4</strong></td>
</tr>
<tr>
<td>644.nab_s</td>
<td>20</td>
<td>146</td>
<td>120</td>
<td><strong>146</strong></td>
<td><strong>119</strong></td>
<td>146</td>
<td>119</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>20</td>
<td>126</td>
<td>72.2</td>
<td>126</td>
<td>72.5</td>
<td><strong>126</strong></td>
<td><strong>72.3</strong></td>
</tr>
<tr>
<td>654.roms_s</td>
<td>20</td>
<td>193</td>
<td>81.7</td>
<td><strong>192</strong></td>
<td><strong>81.9</strong></td>
<td>192</td>
<td>82.0</td>
</tr>
</tbody>
</table>

### Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

### General Notes

Environment variables set by runcpu before the start of the run:

- KMP_AFFINITY = "granularity=fine,compact"
- LD_LIBRARY_PATH = "/spec/lib/ia32:/spec/lib/intel64"
- OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM

memory using Redhat Enterprise Linux 7.5

Transparent Huge Pages enabled by default

Prior to runcpu invocation

Filesystem page cache synced and cleared with:

```
 sync; echo 3 > /proc/sys/vm/drop_caches
```

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

Yes: 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.

Yes: 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.

### Platform Notes

BIOS configuration:

- Power Policy Set to Load Balance
- Hyper-Threaded Setting Set to Disable

(Continued on next page)
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CPU2017 License: 3175
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Tested by: Huawei
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Platform Notes (Continued)

XPT Prefetch Set to Enabled
Sysinfo program /spec/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcede8f2999c33d61f64985e45859ea9
running on sles12sp4 Mon Apr 15 04:23:39 2019

SUT (System Under Test) info as seen by some common utilities.
For more information on this section, see
https://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /proc/cpuinfo
model name : Intel(R) Xeon(R) Gold 5215M CPU @ 2.50GHz
  2 "physical id"s (chips)
  20 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following
excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 10
siblings : 10
physical 0: cores 0 1 2 3 4 8 9 10 11 12
physical 1: cores 0 1 2 3 4 8 9 10 11 12

From lscpu:
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                20
On-line CPU(s) list:   0-19
Thread(s) per core:    1
Core(s) per socket:    10
Socket(s):             2
NUMA node(s):          2
Vendor ID:             GenuineIntel
CPU family:            6
Model:                 85
Model name:            Intel(R) Xeon(R) Gold 5215M CPU @ 2.50GHz
Stepping:              6
CPU MHz:               2500.000
CPU max MHz:           3400.0000
CPU min MHz:           1000.0000
BogoMIPS:              5000.00
Virtualization:        VT-x
L1d cache:             32K
L1i cache:             32K
L2 cache:              1024K
L3 cache:              14080K
NUMA node0 CPU(s):     0-9
NUMA node1 CPU(s):     10-19
Flags:                 fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov

(Continued on next page)
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SPECspeed2017_fp_peak = Not Run

Platform Notes (Continued)

pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtsscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmpref pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtrp pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt ts Ced_linear_timer aes xsave
avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat _l3 cdp _l3
invcpcid_single ssbd mba ibrs ibpb stibp tpr _shadow vnumi flexpriority ept vpid
fs gbase tsc_adjust bmi1 hle avx2 smep bni2 erms invpcid rtm cqm mpx rdt _a avx512f
avx512dq rdseed adx clflushopt clwb intel_pt avx512cd avx512bw avx512vl
xsav eopt xsavef xgetbv1 xsaves cqm _llc cqm _occup _llc cqm _mbm _total cqm _mbm _local
dtherm ida arat pln pks pku ospke avx512_vnni flush_l1d arch_capabilities

/proc/cpuinfo cache data
  cache size : 14080 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.
  available: 2 nodes (0-1)
  node 0 cpus: 0 1 2 3 4 5 6 7 8 9
  node 0 size: 191905 MB
  node 0 free: 184035 MB
  node 1 cpus: 10 11 12 13 14 15 16 17 18 19
  node 1 size: 193280 MB
  node 1 free: 186543 MB
  node distances:
    node 0 1
      0: 10 21
      1: 21 10

From /proc/meminfo
  MemTotal: 394430504 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
  SuSE-release:
    SUSE Linux Enterprise Server 12 (x86_64)
    VERSION = 12
    PATCHLEVEL = 4
    # This file is deprecated and will be removed in a future service pack or release.
    # Please check /etc/os-release for details about this release.
  os-release:
    NAME="SLES"
    VERSION="12-SP4"
    VERSION_ID="12.4"
    PRETTY_NAME="SUSE Linux Enterprise Server 12 SP4"
    ID="sles"
    ANSI_COLOR="0;32"

  (Continued on next page)
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Platform Notes (Continued)

uname -a:
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2017-5754 (Meltdown): Not affected
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted Speculation, IBPB, IBRS_FW

run-level 3 Apr 14 21:31

SPEC is set to: /spec
Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda3      xfs   849G   88G  762G  11% /

Additional information from dmidecode follows. WARNING: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS INSYDE Corp. 6.52 03/16/2019
Memory:
24x Samsung M393A2K43CB2-CVF 16 GB 2 rank 2933, configured at 2666

(End of data from sysinfo program)

Compiler Version Notes

CC 619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

FC 607.cactuBSSN_s(base)

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
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Compiler Version Notes (Continued)

Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
Intel (R) Fortran Intel (R) 64 Compiler for applications running on Intel (R)
64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

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FC  603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
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64, Version 19.0.1.144 Build 20181018
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Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
ifort -m64 icc -m64 -std=c11

Benchmarks using Fortran, C, and C++:
icpc -m64 icc -m64 -std=c11 ifort -m64

Base Portability Flags

603.bwaves_s: -DSPEC_LP64

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**Base Portability Flags (Continued)**

607.cactuBSSN_s: -DSPEC_LP64  
619.lbm_s: -DSPEC_LP64  
621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian  
627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG  
628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian  
-assume byterecl  
638.imagick_s: -DSPEC_LP64  
644.nab_s: -DSPEC_LP64  
649.fotonik3d_s: -DSPEC_LP64  
654.roms_s: -DSPEC_LP64

**Base Optimization Flags**

C benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP

Fortran benchmarks:
-DSPEC_OPENMP -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp  
-nostandard-realloc-lhs

Benchmarks using both Fortran and C:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP  
-nostandard-realloc-lhs

Benchmarks using Fortran, C, and C++:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP  
-nostandard-realloc-lhs

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


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

http://www.spec.org/cpu2017/flags/Huawei-Platform-Settings-SKL-V1.9-revC.xml
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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU2017 v1.0.5 on 2019-04-15 04:23:38-0400.