# SPEC CPU®2017 Floating Point Speed Result

## Huawei

(Test Sponsor: China Academy of Information and Communications Technology)

### Huawei 2488H V5 (Intel Xeon Platinum 8268)

**CPU2017 License:** 6177  
**Test Date:** Feb-2021  
**Test Sponsor:** China Academy of Information and Communications Technology  
**Tested by:** China Academy of Information and Communications Technology  
**Hardware Availability:** Feb-2020  
**Software Availability:** Apr-2020

### SPECspeed®2017_fp_base = 205

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECspeed®2017_fp_base</th>
<th>Threads</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>Not Run</td>
<td>96</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>248</td>
<td>96</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>161</td>
<td>96</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>146</td>
<td>96</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>165</td>
<td>96</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>57.8</td>
<td>96</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>205</td>
<td>96</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>474</td>
<td>96</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>86.1</td>
<td>96</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>293</td>
<td>96</td>
</tr>
</tbody>
</table>

### Software

- **OS:** SUSE Linux Enterprise Server 12 SP4 (x86_64) 4.12.14-94.41-default
- **Compiler:** C/C++: Version 19.1.1.217 of Intel C/C++ Compiler for Linux; Fortran: Version 19.1.1.217 of Intel Fortran Compiler for Linux
- **Parallel:** Yes
- **Firmware:** Version 6.83 released Jun-2019
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** Not Applicable
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage.

### Hardware

- **CPU Name:** Intel Xeon Platinum 8268  
- **Max MHz:** 3900  
- **Nominal:** 2900  
- **Enabled:** 96 cores, 4 chips  
- **Orderable:** 2,4 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:** 35.75 MB I+D on chip per chip  
- **Memory:** 768 GB (48 x 16 GB 2Rx4 PC4-2933Y-R)  
- **Storage:** 1 x 960 GB SATA SSD  
- **Other:** None  
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage.
SPEC CPU®2017 Floating Point Speed Result
Copyright 2017-2021 Standard Performance Evaluation Corporation

Huawei (Test Sponsor: China Academy of Information and Communications Technology)
Huawei 2488H V5 (Intel Xeon Platinum 8268)

CPU2017 License: 6177
Test Sponsor: China Academy of Information and Communications Technology
Tested by: China Academy of Information and Communications Technology

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>96</td>
<td>61.8</td>
<td>955</td>
<td>62.2</td>
<td>949</td>
<td>61.9</td>
<td>953</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>96</td>
<td>67.2</td>
<td>248</td>
<td>67.8</td>
<td>246</td>
<td>67.3</td>
<td>248</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>96</td>
<td>32.3</td>
<td>162</td>
<td>32.8</td>
<td>159</td>
<td>32.5</td>
<td>161</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>96</td>
<td>90.8</td>
<td>146</td>
<td>90.6</td>
<td>146</td>
<td>90.6</td>
<td>146</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>96</td>
<td>54.3</td>
<td>163</td>
<td>53.4</td>
<td>166</td>
<td>53.9</td>
<td>165</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>96</td>
<td>210</td>
<td>56.7</td>
<td>205</td>
<td>57.9</td>
<td>205</td>
<td>57.8</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>96</td>
<td>70.2</td>
<td>206</td>
<td>70.5</td>
<td>205</td>
<td>70.6</td>
<td>204</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>96</td>
<td>36.8</td>
<td>474</td>
<td>36.8</td>
<td>475</td>
<td>36.9</td>
<td>474</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>96</td>
<td>108</td>
<td>84.1</td>
<td>106</td>
<td>86.1</td>
<td>105</td>
<td>86.9</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>96</td>
<td>55.9</td>
<td>282</td>
<td>53.7</td>
<td>293</td>
<td>52.4</td>
<td>300</td>
</tr>
</tbody>
</table>

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

Environment Variables Notes

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

KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = 
"/opt/intel/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64:
/usr/local/jemalloc64-5.0.1"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"

General Notes

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
NA: 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.
Huawei
(Test Sponsor: China Academy of Information and Communications Technology)

Huawei 2488H V5 (Intel Xeon Platinum 8268)

| SPECspeed®2017_fp_base = 205 |
| SPECspeed®2017_fp_peak = Not Run |

CPU2017 License: 6177  
Test Sponsor: China Academy of Information and Communications Technology  
Tested by: China Academy of Information and Communications Technology

Test Date: Feb-2021  
Hardware Availability: Feb-2020  
Software Availability: Apr-2020

**Platform Notes**

BIOS configuration:
Power Policy Set to Load Balance  
Hyper-Threading Set to Disabled  
XPT Prefetch Set to Enabled

Sysinfo program /spec2017/bin/sysinfo  
Rev: r6365 of 2019-08-21 295195f888a3d7edbe6e46a485a0011
running on linux-mb4p Fri Feb 19 14:20:21 2021

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) Platinum 8268 CPU @ 2.90GHz
- 4 "physical id"s (chips)
- 96 "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: 24
  - siblings: 24
  - physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 13 16 17 18 19 20 21 22 25 26 27 28 29
  - physical 1: cores 0 1 2 3 4 5 6 9 10 11 12 13 16 17 18 19 20 21 24 25 26 27 28 29
  - physical 2: cores 0 1 2 3 4 5 6 9 10 11 12 13 16 17 18 19 20 21 24 25 26 27 28 29
  - physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 25 26 27 28 29

From lscpu:

- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit
- Byte Order: Little Endian
- CPU(s): 96
- On-line CPU(s) list: 0-95
- Thread(s) per core: 1
- Core(s) per socket: 24
- Socket(s): 4
- NUMA node(s): 4
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 85
- Model name: Intel(R) Xeon(R) Platinum 8268 CPU @ 2.90GHz
- Stepping: 7
- CPU MHz: 2900.000
- CPU max MHz: 3900.0000
- CPU min MHz: 1200.0000
- BogoMIPS: 5800.00
- Virtualization: VT-x
- L1d cache: 32K

(Continued on next page)
SPEC CPU®2017 Floating Point Speed Result

Huawei
(Test Sponsor: China Academy of Information and Communications Technology)
Huawei 2488H V5 (Intel Xeon Platinum 8268)

SPECspeed®2017_fp_base = 205
SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 6177
Test Sponsor: China Academy of Information and Communications Technology
Test Date: Feb-2021
Tested by: China Academy of Information and Communications Technology
Software Availability: Apr-2020
Hardware Availability: Feb-2020

Platform Notes (Continued)

L1i cache: 32K
L2 cache: 1024K
L3 cache: 36608K
NUMA node0 CPU(s): 0-23
NUMA node1 CPU(s): 24-47
NUMA node2 CPU(s): 48-71
NUMA node3 CPU(s): 72-95
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
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
xtrm pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avxf16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cdp_l3
invpcid_single ssbd mba ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid
fsorsbase tsc_adjust bmi1 hle avx2 smep bmi2 ersed invpcid rtm cqm mpx rdt_a avx512f
avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl
xlsaveopt xsavec xgetbv1 xsavec cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local
dtherm ida arat pin pts pku ospke avx512_vnni flush_lld arch_capabilities

From /proc/cpuinfo cache data
  cache size : 36608 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.
  available: 4 nodes (0-3)
    node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
    node 0 size: 191972 MB
    node 0 free: 191464 MB
    node 1 cpus: 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
    node 1 size: 193530 MB
    node 1 free: 192869 MB
    node 2 cpus: 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71
    node 2 size: 193501 MB
    node 2 free: 193289 MB
    node 3 cpus: 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95
    node 3 size: 193311 MB
    node 3 free: 192528 MB
    node distances:
      node 0 1 2 3
        0: 10 21 21 21
        1: 21 10 21 21
        2: 21 21 10 21
        3: 21 21 21 10

From /proc/meminfo
  MemTotal: 790851576 kB
  HugePages_Total: 0

(Continued on next page)
<table>
<thead>
<tr>
<th>Platform Notes (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hugepagesize:</td>
</tr>
<tr>
<td>From /etc/<em>release</em> /etc/<em>version</em></td>
</tr>
<tr>
<td>SuSE-release:</td>
</tr>
<tr>
<td>SUSE Linux Enterprise Server 12 (x86_64)</td>
</tr>
<tr>
<td>VERSION = 12</td>
</tr>
<tr>
<td>PATCHLEVEL = 4</td>
</tr>
<tr>
<td># This file is deprecated and will be removed in a future service pack or release.</td>
</tr>
<tr>
<td># Please check /etc/os-release for details about this release.</td>
</tr>
<tr>
<td>os-release:</td>
</tr>
<tr>
<td>NAME=&quot;SLES&quot;</td>
</tr>
<tr>
<td>VERSION=&quot;12-SP4&quot;</td>
</tr>
<tr>
<td>VERSION_ID=&quot;12.4&quot;</td>
</tr>
<tr>
<td>PRETTY_NAME=&quot;SUSE Linux Enterprise Server 12 SP4&quot;</td>
</tr>
<tr>
<td>ID=&quot;sles&quot;</td>
</tr>
<tr>
<td>ANSI_COLOR=&quot;0;32&quot;</td>
</tr>
<tr>
<td>CPE_NAME=&quot;cpe:/o:suse:sles:12:sp4&quot;</td>
</tr>
</tbody>
</table>

uname -a:
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: No status reported
CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
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 Feb 19 12:16
SPEC is set to: /spec2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 883G 42G 842G 5% /

From /sys/devices/virtual/dmi/id
BIOS: INSYDE Corp. 6.83 06/29/2019
Vendor: Huawei
Product: 2488H V5
Product Family: Purley
Serial: Huawei

Additional information from dmidecode follows. WARNING: Use caution when you interpret

(Continued on next page)
Platform Notes (Continued)

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.

Memory:

48x Samsung M393A2K43CB2-CVF 16 GB 2 rank 2933

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
<table>
<thead>
<tr>
<th>C</th>
<th>619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C</td>
<td>Intel(R) 64 Compiler for applications running on Intel(R) 64,</td>
</tr>
<tr>
<td></td>
<td>Version 19.1.1.217 Build 20200306</td>
</tr>
<tr>
<td></td>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------------------------------------</td>
</tr>
</tbody>
</table>

==============================================================================
<table>
<thead>
<tr>
<th>C++, C, Fortran</th>
<th>607.cactuBSSN_s(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C++</td>
<td>Intel(R) 64 Compiler for applications running on Intel(R) 64,</td>
</tr>
<tr>
<td></td>
<td>Version 19.1.1.217 Build 20200306</td>
</tr>
<tr>
<td></td>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
<tr>
<td>Intel(R) C</td>
<td>Intel(R) 64 Compiler for applications running on Intel(R) 64,</td>
</tr>
<tr>
<td></td>
<td>Version 19.1.1.217 Build 20200306</td>
</tr>
<tr>
<td></td>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
<tr>
<td>Intel(R) Fortran</td>
<td>Intel(R) 64 Compiler for applications running on Intel(R) 64,</td>
</tr>
<tr>
<td></td>
<td>Version 19.1.1.217 Build 20200306</td>
</tr>
<tr>
<td></td>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

==============================================================================
<table>
<thead>
<tr>
<th>Fortran</th>
<th>603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran</td>
<td>Intel(R) 64 Compiler for applications running on Intel(R) 64,</td>
</tr>
<tr>
<td></td>
<td>Version 19.1.1.217 Build 20200306</td>
</tr>
<tr>
<td></td>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

==============================================================================
<table>
<thead>
<tr>
<th>Fortran, C</th>
<th>621.wrf_s(base) 627.cam4_s(base) 628.pop2_s(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran</td>
<td>Intel(R) 64 Compiler for applications running on Intel(R) 64,</td>
</tr>
<tr>
<td></td>
<td>Version 19.1.1.217 Build 20200306</td>
</tr>
<tr>
<td></td>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

(Continued on next page)
Huawei
(Test Sponsor: China Academy of Information and Communications Technology)
Huawei 2488H V5 (Intel Xeon Platinum 8268)
Huawei & SPEC CPU®2017 Floating Point Speed Result

Huawei 2488H V5 (Intel Xeon Platinum 8268)

SPECspeed®2017_fp_base = 205
SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 6177
Test Sponsor: China Academy of Information and Communications Technology
Tested by: China Academy of Information and Communications Technology

Test Date: Feb-2021
Hardware Availability: Feb-2020
Software Availability: Apr-2020

Fortran benchmarks:
-m64 -Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX512 -ipo -03
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -gopenmp -nostandard-realloc-lhs
-mbranches-within-32B-boundaries -L/usr/local/jemalloc64-5.0.1/
-ljemalloc

Benchmarks using both Fortran and C:
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -ipo -03 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -gopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/ -ljemalloc

Benchmarks using Fortran, C, and C++:
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -ipo -03 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -gopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/ -ljemalloc

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/CAICT-Platform-Settings-V1.3.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revB.xml
http://www.spec.org/cpu2017/flags/CAICT-Platform-Settings-V1.3.xml

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

SPEC CPU and SPECspeed are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

Originally published on 2021-03-16.