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 2288H V6 (Intel Xeon Platinum 8380)

$SPECspeed®2017\_fp\_base =$ **236**

$SPECspeed®2017\_fp\_peak =$ Not Run
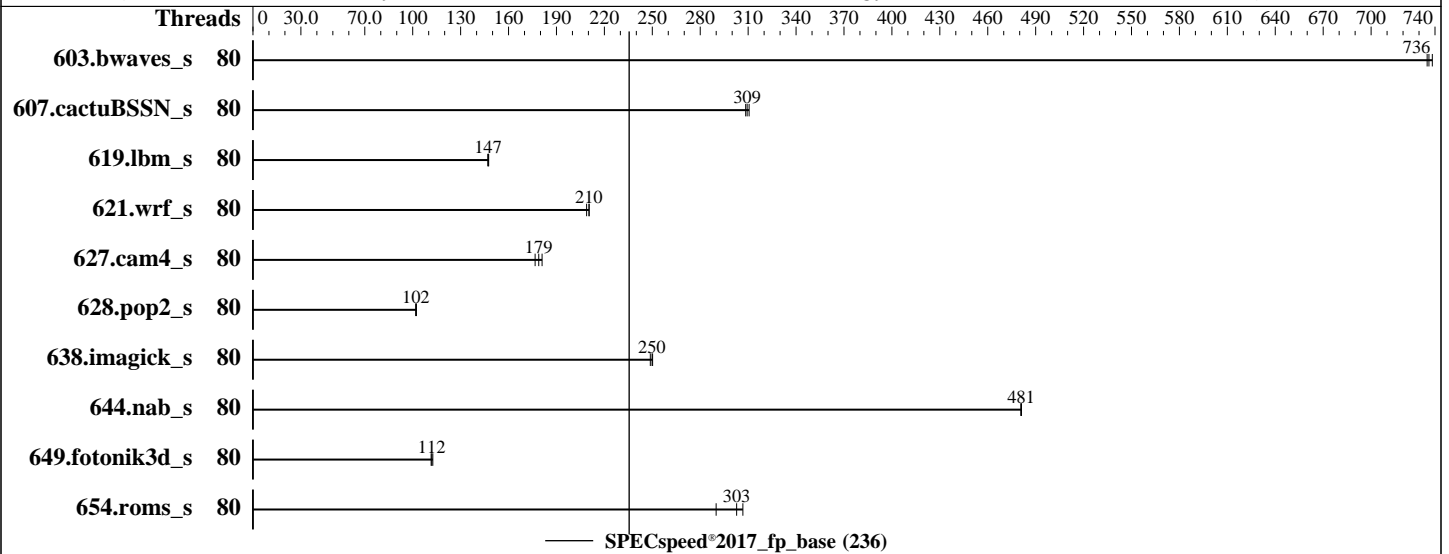
CPU2017 License: 6177

Test Sponsor: China Academy of Information and Communications Technology

Tested by: China Academy of Information and Communications Technology

Test Date: Apr-2021

Hardware Availability: Apr-2021

Software Availability: Mar-2021

Threads	0 30.0 70.0 100 130 160 190 220 250 280 310 340 370 400 430 460 490 520 550 580 610 640 670 700 740
603.bwaves_s 80	736
607.cactuBSSN_s 80	309
619.lbm_s 80	147
621.wrf_s 80	210
627.cam4_s 80	179
628.pop2_s 80	102
638.imagick_s 80	250
644.nab_s 80	481
649.fotonik3d_s 80	112
654.roms_s 80	303

SPECspeed®2017_fp_base (236)

Hardware

CPU Name: Intel Xeon Platinum 8380
 Max MHz: 3400
 Nominal: 2300
Enabled: 80 cores, 2 chips
Orderable: 1,2 chips
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 1.25 MB I+D on chip per core
 L3: 60 MB I+D on chip per chip
 Other: None
Memory: 1 TB (32 x 32 GB 2Rx4 PC4-3200AA-R)
Storage: 1 x 960 GB SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP2(x86_64)
Kernel 5.3.18-22-default

Compiler: Fortran: Version 2021.2.0 of Intel Fortran Compiler Classic Build 20210228 for Linux; C/C++: Version 2021.2.0 of Intel C/C++ Compiler Classic Build 20210228 for Linux;

Parallel: Yes
Firmware: Version 0.66 released Apr-2021
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: jemalloc memory allocator V5.0.1
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 2288H V6 (Intel Xeon Platinum 8380)

SPECspeed®2017_fp_base = 236

SPECspeed®2017_fp_peak = Not Run

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

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	80	**80.1**	**736**	79.9	738	80.3	735							
607.cactuBSSN_s	80	**53.9**	**309**	53.7	311	54.0	308							
619.lbm_s	80	**35.6**	**147**	35.5	148	35.6	147							
621.wrf_s	80	63.3	209	62.8	210	**62.9**	**210**							
627.cam4_s	80	50.2	177	49.0	181	**49.5**	**179**							
628.pop2_s	80	**116**	**102**	116	102	117	102							
638.imagick_s	80	**57.7**	**250**	58.0	249	57.7	250							
644.nab_s	80	36.3	481	**36.3**	**481**	36.3	481							
649.fotonik3d_s	80	81.7	112	81.0	113	**81.4**	**112**							
654.roms_s	80	51.3	307	**52.0**	**303**	54.3	290							
SPECspeed®2017_fp_base =		**236**												
SPECspeed®2017_fp_peak =		**Not Run**												

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

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
SCALING_GOVERNOR set to ondemand
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH =
     "/opt/intel/oneapi/compiler/2021.2.0/linux/compiler/lib/intel64:/usr/loc
     al/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.
```

(Continued on next page)

SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

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

SPECspeed®2017_fp_base =   236

Huawei 2288H V6 (Intel Xeon Platinum 8380)

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: Apr-2021

Hardware Availability: Apr-2021

Software Availability: Mar-2021

General Notes (Continued)

```
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases
```

Platform Notes

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

Sysinfo program /home/spec2017115/bin/sysinfo
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c
running on localhost Mon Apr 26 19:16:57 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 8380 CPU @ 2.30GHz
      2  "physical id"s (chips)
     80 "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 : 40
     siblings  : 40
     physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
     25 26 27 28 29 30 31 32 33 34 35 36 37 38 39
     physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
     25 26 27 28 29 30 31 32 33 34 35 36 37 38 39

From lscpu:
     Architecture:        x86_64
     CPU op-mode(s):      32-bit, 64-bit
     Byte Order:          Little Endian
     Address sizes:       46 bits physical, 57 bits virtual
     CPU(s):              80
     On-line CPU(s) list: 0-79
     Thread(s) per core:  1
     Core(s) per socket:  40
     Socket(s):           2
     NUMA node(s):        2
     Vendor ID:           GenuineIntel
     CPU family:          6
     Model:               106
```

(Continued on next page)

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

SPECspeed®2017_fp_base = 236

Huawei 2288H V6 (Intel Xeon Platinum 8380)

SPECspeed®2017_fp_peak = Not Run

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

Platform Notes (Continued)

```
        Model name:           Intel(R) Xeon(R) Platinum 8380 CPU @ 2.30GHz
        Stepping:             6
        CPU MHz:              803.905
        CPU max MHz:          2301.0000
        CPU min MHz:          800.0000
        BogoMIPS:             4600.00
        Virtualization:       VT-x
        L1d cache:            48K
        L1i cache:            32K
        L2 cache:             1280K
        L3 cache:             61440K
        NUMA node0 CPU(s):    0-39
        NUMA node1 CPU(s):    40-79
        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
    aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
    xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
    avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 invpcid_single ssbd
    mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad
    fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm rdt_a avx512f
    avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha_ni
    avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
    cqm_mbm_local wbnoinvd dtherm ida arat pln pts avx512vbmi umip pku ospke
    avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq
    la57 rdpid md_clear pconfig flush_l1d arch_capabilities

  /proc/cpuinfo cache data
     cache size : 61440 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 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
    28 29 30 31 32 33 34 35 36 37 38 39
    node 0 size: 515406 MB
    node 0 free: 509511 MB
    node 1 cpus: 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64
    65 66 67 68 69 70 71 72 73 74 75 76 77 78 79
    node 1 size: 515805 MB
    node 1 free: 512204 MB
    node distances:
    node   0   1
      0:  10  20
      1:  20  10

  From /proc/meminfo
```

(Continued on next page)

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

SPECspeed®2017_fp_base =   236

Huawei 2288H V6 (Intel Xeon Platinum 8380)

SPECspeed®2017_fp_peak = Not Run

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

Platform Notes (Continued)

```
    MemTotal:       1055960792 kB
    HugePages_Total:        0
    Hugepagesize:       2048 kB


/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has
   ondemand

From /etc/*release* /etc/*version*
   os-release:
       NAME="SLES"
       VERSION="15-SP2"
       VERSION_ID="15.2"
       PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
       ID="sles"
       ID_LIKE="suse"
       ANSI_COLOR="0;32"
       CPE_NAME="cpe:/o:suse:sles:15:sp2"

uname -a:
   Linux localhost 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020 (720aeba) x86_64
   x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit):                     Not affected
CVE-2018-3620 (L1 Terminal Fault):                  Not affected
Microarchitectural Data Sampling:                   Not affected
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: usercopy/swapgs
                                                    barriers and __user pointer
                                                    sanitization
CVE-2017-5715 (Spectre variant 2):                  Mitigation: Enhanced IBRS, IBPB:
                                                    conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort):            Not affected

run-level 3 Apr 26 08:40 last=5

SPEC is set to: /home/spec2017115
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda3       xfs   548G   83G  465G  16% /

From /sys/devices/virtual/dmi/id
    Vendor:         Huawei
```

(Continued on next page)

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

SPECspeed®2017_fp_base = 236

Huawei 2288H V6 (Intel Xeon Platinum 8380)

SPECspeed®2017_fp_peak = Not Run

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

Platform Notes (Continued)

```
        Product:        2288H V6
        Product Family: Whitley
        Serial:         Huawei

  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.
    Memory:
      32x Samsung M393A4K40DB3-CWE 32 GB 2 rank 3200

  BIOS:
    BIOS Vendor:      INSYDE Corp.
    BIOS Version:     0.66
    BIOS Date:        04/09/2021
    BIOS Revision:    0.66

  (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C                | 619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
  64, Version 2021.2.0 Build 20210228_000000
Copyright (C) 1985-2021 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C++, C, Fortran | 607.cactuBSSN_s(base)
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler Classic for applications running on
  Intel(R) 64, Version 2021.2.0 Build 20210228_000000
Copyright (C) 1985-2021 Intel Corporation.  All rights reserved.
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
  64, Version 2021.2.0 Build 20210228_000000
Copyright (C) 1985-2021 Intel Corporation.  All rights reserved.
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
  Intel(R) 64, Version 2021.2.0 Build 20210228_000000
Copyright (C) 1985-2021 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
Fortran          | 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
------------------------------------------------------------------------------
```

(Continued on next page)

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

Huawei 2288H V6 (Intel Xeon Platinum 8380)

SPECspeed®2017_fp_base =   236

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: Apr-2021
Hardware Availability: Apr-2021
Software Availability: Mar-2021

Compiler Version Notes (Continued)

```
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
  Intel(R) 64, Version 2021.2.0 Build 20210228_000000
Copyright (C) 1985-2021 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------


==============================================================================
Fortran, C     | 621.wrf_s(base) 627.cam4_s(base) 628.pop2_s(base)
------------------------------------------------------------------------

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
  Intel(R) 64, Version 2021.2.0 Build 20210228_000000
Copyright (C) 1985-2021 Intel Corporation.  All rights reserved.
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
  64, Version 2021.2.0 Build 20210228_000000
Copyright (C) 1985-2021 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icc`

Fortran benchmarks:
`ifort`

Benchmarks using both Fortran and C:
`ifort icc`

Benchmarks using Fortran, C, and C++:
`icpc icc ifort`

Base Portability Flags

603.bwaves_s: `-DSPEC_LP64`
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`

SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

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

Base Optimization Flags

C benchmarks:
```
-m64 -std=c11 -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-mbranches-within-32B-boundaries
```

Fortran benchmarks:
```
-m64 -Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX512 -ipo -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -qopenmp -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 -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-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 -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-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/Intel-ic2021-official-linux64_revC.html
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-ic2021-official-linux64_revC.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.

Tested with SPEC CPU®2017 v1.1.5 on 2021-04-26 19:16:57-0400.
Report generated on 2021-05-12 13:44:48 by CPU2017 PDF formatter v6442.
Originally published on 2021-05-11.