SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

xFusion

xFusion 2488H V6 (Intel Xeon Platinum 8354H)

$SPECspeed®2017\_fp\_base =$ 217

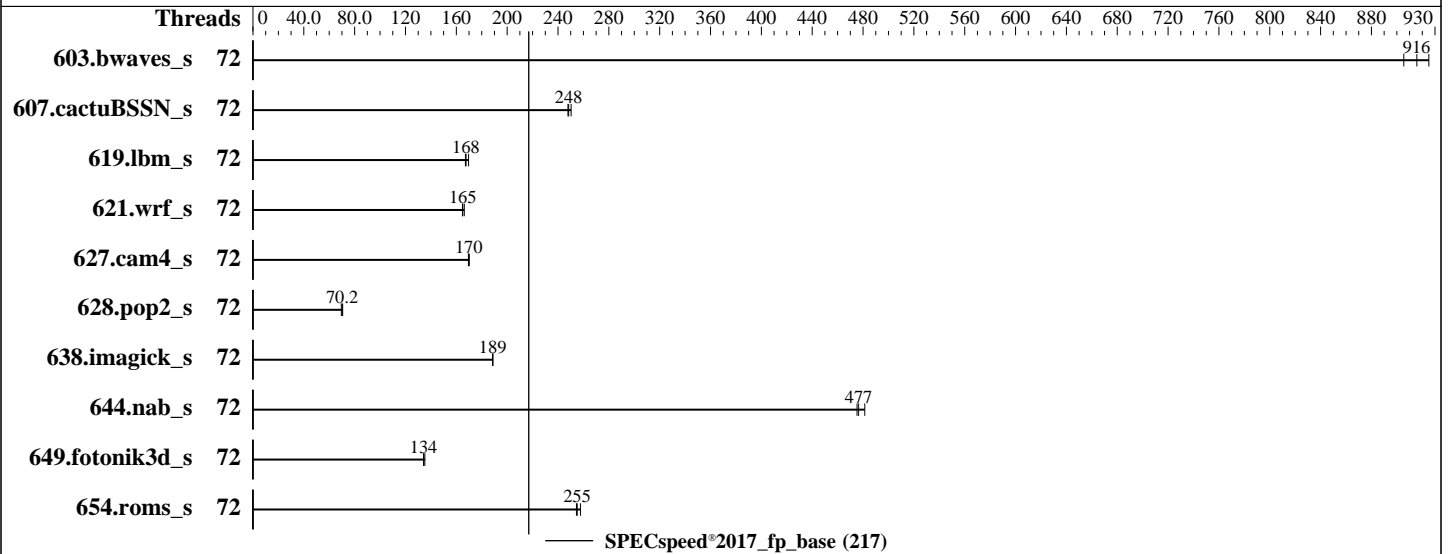$SPECspeed®2017\_fp\_peak =$ Not Run

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

Test Date: Apr-2022
Hardware Availability: Jun-2020
Software Availability: Dec-2021

Threads scale: 0 40.0 80.0 120 160 200 240 280 320 360 400 440 480 520 560 600 640 680 720 760 800 840 880 930

- 603.bwaves_s 72 — 916
- 607.cactuBSSN_s 72 — 248
- 619.lbm_s 72 — 168
- 621.wrf_s 72 — 165
- 627.cam4_s 72 — 170
- 628.pop2_s 72 — 70.2
- 638.imagick_s 72 — 189
- 644.nab_s 72 — 477
- 649.fotonik3d_s 72 — 134
- 654.roms_s 72 — 255

SPECspeed®2017_fp_base (217)

Hardware

CPU Name: Intel Xeon Platinum 8354H
 Max MHz: 4300
 Nominal: 3100
Enabled: 72 cores, 4 chips
Orderable: 2,4 chips
Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 24.75 MB I+D on chip per chip
 Other: None
Memory: 1536 GB (48 x 32 GB 2Rx4 PC4-3200AA-R)
Storage: 1 x 960 GB SATA SSD
Other: None

Software

OS: Red Hat Enterprise Linux release 8.3 (Ootpa)
4.18.0-240.el8.x86_64
Compiler: Fortran: Version 2021.5.0 of Intel Fortran Compiler
Classic Build 20211109 for Linux;
C/C++: Version 2021.5.0 of Intel C/C++ Compiler
Classic Build 20211109 for Linux;
Parallel: Yes
Firmware: Version 0.81 Released Feb-2022
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 and OS set to prefer performance at the cost of additional power usage

SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

xFusion

xFusion 2488H V6 (Intel Xeon Platinum 8354H)

SPECspeed®2017_fp_base = 217

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

Test Date: Apr-2022
Hardware Availability: Jun-2020
Software Availability: Dec-2021

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	72	65.2	905	63.8	925	**64.4**	**916**							
607.cactuBSSN_s	72	**67.1**	**248**	67.3	248	66.6	250							
619.lbm_s	72	31.3	167	**31.2**	**168**	30.9	170							
621.wrf_s	72	80.2	165	79.5	166	**80.1**	**165**							
627.cam4_s	72	52.1	170	**52.2**	**170**	52.3	170							
628.pop2_s	72	168	70.6	171	69.5	**169**	**70.2**							
638.imagick_s	72	76.5	189	76.5	189	**76.5**	**189**							
644.nab_s	72	36.3	481	**36.7**	**477**	36.8	475							
649.fotonik3d_s	72	67.9	134	**67.9**	**134**	67.4	135							
654.roms_s	72	61.1	258	**61.7**	**255**	61.9	255							
SPECspeed®2017_fp_base =	**217**													
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"
```

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/2022.0.2/linux/compiler/lib/intel64:/spec201
     7/je5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"
```

General Notes

```
Binaries compiled on a system with 1x Intel Xeon Silver 4108 CPU + 64GB RAM
memory using Red Hat Enterprise Linux 8.3
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)

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

xFusion

xFusion 2488H V6 (Intel Xeon Platinum 8354H)

$SPECspeed®2017\_fp\_base = 217$

$SPECspeed®2017_fp_peak = $ Not Run

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

Test Date: Apr-2022
Hardware Availability: Jun-2020
Software Availability: Dec-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:
 Performance Profile Set to Load Balance
 Hyper-Threading Set to Disabled

 Sysinfo program /spec2017/bin/sysinfo
 Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
 running on localhost.localdomain Thu Apr 28 16:56:43 2022

 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 8354H CPU @ 3.10GHz
       4  "physical id"s (chips)
       72 "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 : 18
       siblings  : 18
       physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
       physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
       physical 2: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
       physical 3: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27

 From lscpu from util-linux 2.32.1:
       Architecture:        x86_64
       CPU op-mode(s):      32-bit, 64-bit
       Byte Order:          Little Endian
       CPU(s):              72
       On-line CPU(s) list: 0-71
       Thread(s) per core:  1
       Core(s) per socket:  18
       Socket(s):           4
       NUMA node(s):        4
       Vendor ID:           GenuineIntel
       CPU family:          6
       Model:               85
       Model name:          Intel(R) Xeon(R) Platinum 8354H CPU @ 3.10GHz
       Stepping:            11
```

(Continued on next page)

xFusion

xFusion 2488H V6 (Intel Xeon Platinum 8354H)

SPECspeed®2017_fp_base = 217

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

Test Date: Apr-2022
Hardware Availability: Jun-2020
Software Availability: Dec-2021

Platform Notes (Continued)

```
        CPU MHz:                3800.299
        CPU max MHz:            4300.0000
        CPU min MHz:            1000.0000
        BogoMIPS:               6200.00
        Virtualization:         VT-x
        L1d cache:              32K
        L1i cache:              32K
        L2 cache:               1024K
        L3 cache:               25344K
        NUMA node0 CPU(s):      0-17
        NUMA node1 CPU(s):      18-35
        NUMA node2 CPU(s):      36-53
        NUMA node3 CPU(s):      54-71
        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 cdp_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 cqm mpx
     rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw
     avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
     cqm_mbm_local avx512_bf16 dtherm ida arat pln pts pku ospke avx512_vnni md_clear
     flush_l1d arch_capabilities

  /proc/cpuinfo cache data
    cache size : 25344 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
    node 0 size: 373116 MB
    node 0 free: 384768 MB
    node 1 cpus: 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
    node 1 size: 376181 MB
    node 1 free: 385060 MB
    node 2 cpus: 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53
    node 2 size: 375979 MB
    node 2 free: 384313 MB
    node 3 cpus: 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71
    node 3 size: 375744 MB
    node 3 free: 386649 MB
    node distances:
    node   0   1   2   3
      0:  10  20  20  20
```

(Continued on next page)

xFusion

$SPECspeed^{®}2017\_fp\_base =$ 217

xFusion 2488H V6 (Intel Xeon Platinum 8354H)

$SPECspeed^{®}2017\_fp\_peak =$ Not Run

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

Test Date: Apr-2022
Hardware Availability: Jun-2020
Software Availability: Dec-2021

Platform Notes (Continued)

```
     1:  20  10  20  20
     2:  20  20  10  20
     3:  20  20  20  10

From /proc/meminfo
   MemTotal:       1583442288 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

/sbin/tuned-adm active
    Current active profile: throughput-performance

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

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux"
      VERSION="8.3 (Ootpa)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="8.3"
      PLATFORM_ID="platform:el8"
      PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
      ANSI_COLOR="0;31"
   redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
   system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga

uname -a:
   Linux localhost.localdomain 4.18.0-240.el8.x86_64 #1 SMP Wed Sep 23 05:13:10 EDT 2020
   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
```

(Continued on next page)

xFusion

xFusion 2488H V6 (Intel Xeon Platinum 8354H)

$SPECspeed^®2017\_fp\_base =$ 217

$SPECspeed^®2017\_fp\_peak =$ Not Run

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

Test Date: Apr-2022
Hardware Availability: Jun-2020
Software Availability: Dec-2021

Platform Notes (Continued)

```
 CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
 CVE-2019-11135 (TSX Asynchronous Abort):                Not affected

 run-level 3 Apr 28 15:02

 SPEC is set to: /spec2017
    Filesystem              Type  Size  Used Avail Use% Mounted on
    /dev/mapper/rhel-root xfs   270G   87G  184G  33% /

 From /sys/devices/virtual/dmi/id
     Vendor:          XFUSION
     Product:         2488H V6
     Product Family:  Cedar Island
     Serial:          123456


 Additional information from dmidecode 3.2 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:
     48x Samsung M393A4K40DB3-CWE 32 GB 2 rank 3200

 BIOS:
    BIOS Vendor:       ByoSoft
    BIOS Version:      0.81
    BIOS Date:         02/10/2022

 (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 2021.5.0 Build 20211109_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 2021.5.0 Build 20211109_000000
Copyright (C) 1985-2021 Intel Corporation.  All rights reserved.
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
```

(Continued on next page)

xFusion

SPECspeed®2017_fp_base =   217

xFusion 2488H V6 (Intel Xeon Platinum 8354H)   SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

Test Date: Apr-2022
Hardware Availability: Jun-2020
Software Availability: Dec-2021

Compiler Version Notes (Continued)

```
  64, Version 2021.5.0 Build 20211109_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 2021.5.0 Build 20211109_000000
Copyright (C) 1985-2021 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------


==============================================================================
Fortran        | 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
  Intel(R) 64, Version 2021.5.0 Build 20211109_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 2021.5.0 Build 20211109_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 2021.5.0 Build 20211109_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`

(Continued on next page)

SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

xFusion

xFusion 2488H V6 (Intel Xeon Platinum 8354H)

SPECspeed®2017_fp_base = 217

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

Test Date: Apr-2022
Hardware Availability: Jun-2020
Software Availability: Dec-2021

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:
`-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/spec2017/je5.0.1-64 -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/spec2017/je5.0.1-64 -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/spec2017/je5.0.1-64 -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.2022-04-29.html
http://www.spec.org/cpu2017/flags/xFusion-Platform-Settings-CPX-V1.1.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.2022-04-29.xml
http://www.spec.org/cpu2017/flags/xFusion-Platform-Settings-CPX-V1.1.xml

Standard Performance Evaluation Corporation (info@spec.org)
https://www.spec.org/

SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

xFusion

xFusion 2488H V6 (Intel Xeon Platinum 8354H)

SPECspeed®2017_fp_base = 217

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

Test Date: Apr-2022
Hardware Availability: Jun-2020
Software Availability: Dec-2021

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

Tested with SPEC CPU®2017 v1.1.8 on 2022-04-28 04:56:43-0400.
Report generated on 2022-06-07 15:41:50 by CPU2017 PDF formatter v6442.
Originally published on 2022-06-07.