SPEC CPU®2017 Floating Point Rate Result

xFusion

xFusion 2288H V6 (Intel Xeon Gold 6336Y)

SPECCrate®2017_fp_base = 366
SPECCrate®2017_fp_peak = Not Run

CPU2017 License: 6488
Test Sponsor: xFusion
Test Date: Mar-2022
Tested by: xFusion
Hardware Availability: Apr-2021
Software Availability: May-2021

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECrate®2017_fp_base (366)</th>
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<tbody>
<tr>
<td>503.bwaves_r</td>
<td>96</td>
</tr>
<tr>
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<tr>
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<tr>
<td>554.roms_r</td>
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<table>
<thead>
<tr>
<th>Hardware</th>
</tr>
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<tbody>
<tr>
<td>CPU Name: Intel Xeon Gold 6336Y</td>
</tr>
<tr>
<td>Max MHz: 3600</td>
</tr>
<tr>
<td>Nominal: 2400</td>
</tr>
<tr>
<td>Enabled: 48 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td>Orderable: 1,2 chips</td>
</tr>
<tr>
<td>L1: 32 KB I + 48 KB D on chip per core</td>
</tr>
<tr>
<td>L2: 1.25 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3: 36 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Memory: 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R)</td>
</tr>
<tr>
<td>Storage: 1 x 960 GB SATA SSD</td>
</tr>
<tr>
<td>Other: None</td>
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<table>
<thead>
<tr>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS: Red Hat Enterprise Linux release 8.4 (Ootpa)</td>
</tr>
<tr>
<td>Compiler: C/C++: Version 2021.1 of Intel oneAPI DPC++/C++ Compiler Build 20201113 for Linux; Fortran: Version 2021.1 of Intel Fortran Compiler Classic Build 20201112 for Linux</td>
</tr>
<tr>
<td>Parallel: No</td>
</tr>
<tr>
<td>Firmware: Version 0.95 Released Dec-2021</td>
</tr>
<tr>
<td>File System: xfs</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>Peak Pointers: Not Applicable</td>
</tr>
<tr>
<td>Other: jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td>Power Management: BIOS and OS set to prefer performance at the cost of additional power usage</td>
</tr>
</tbody>
</table>
**xFusion**  
xFusion 2288H V6 (Intel Xeon Gold 6336Y)  

| Benchmark     | Copies | Seconds | Ratio | Base | Seconds | Ratio | Peak | Seconds | Ratio |
|---------------|--------|---------|-------|------|---------|-------|      |---------|-------|
| 503.bwaves_r  | 96     | 1287    | 748   | 1287 | 748     | 1287  | 748  | 1287    | 748   |
| 509.cactuBSSN_r | 96   | 248     | 489   | 251  | 484     | 250   | 487  | 251     | 484   |
| 508.namd_r    | 96     | 329     | 278   | 329  | 277     | 330   | 276  | 329     | 277   |
| 510.parest_r  | 96     | 1269    | 198   | 1271 | 198     | 1275  | 197  | 1271    | 198   |
| 511.povray_r  | 96     | 559     | 401   | 557  | 402     | 555   | 404  | 557     | 402   |
| 519.lbm_r     | 96     | 381     | 266   | 381  | 266     | 381   | 266  | 381     | 266   |
| 521.wrf_r     | 96     | 630     | 341   | 631  | 341     | 631   | 341  | 631     | 341   |
| 526.blender_r | 96     | 400     | 366   | 401  | 364     | 401   | 365  | 401     | 365   |
| 527.cam4_r    | 96     | 461     | 365   | 466  | 360     | 461   | 364  | 461     | 364   |
| 538.imagick_r | 96     | 237     | 1010  | 236  | 1010    | 236   | 1010 | 236     | 1010  |
| 544.nab_r     | 96     | 262     | 617   | 264  | 613     | 263   | 615  | 264     | 613   |
| 549.fotonik3d_r | 96 | 1636   | 229   | 1635 | 229     | 1635  | 229  | 1635    | 229   |
| 554.roms_r    | 96     | 994     | 154   | 994  | 153     | 992   | 154  | 994     | 153   |

**Submit Notes**

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

**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:
LD_LIBRARY_PATH = "/spec2017/lib/intel64:/spec2017/je5.0.1-64"  
MALLOC_CONF = "retain:true"

**General Notes**

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Red Hat Enterprise Linux 8.1  
Transparent Huge Pages enabled by default  
Prior to runcpu invocation  
Filesystem page cache synced and cleared with:

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

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**xFusion**  

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

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<td>May-2021</td>
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---

**General Notes (Continued)**

```plaintext
sync; echo 3 > /proc/sys/vm/drop_caches
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>
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.
```

---

**Platform Notes**

**BIOS configuration:**
Performance Profile Set to Performance  
SNC Set to Enabled SNC2 (2-clusters)

Sysinfo program /spec2017/bin/sysinfo  
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf6d  
running on localhost.localdomain Sat Mar 26 07:06:39 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) Gold 6336Y CPU @ 2.40GHz
  2 "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 : 48
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
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
```

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): 96
On-line CPU(s) list: 0-95
Thread(s) per core: 2
Core(s) per socket: 24
```

(Continued on next page)
Platform Notes (Continued)

Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
BIOS Vendor ID: Intel(R) Corporation
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 6336Y CPU @ 2.40GHz
BIOS Model name: Intel(R) Xeon(R) Gold 6336Y CPU @ 2.40GHz
Stepping: 6
CPU MHz: 3000.091
BogoMIPS: 4800.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 36864K
NUMA node0 CPU(s): 0-11,48-59
NUMA node1 CPU(s): 12-23,60-71
NUMA node2 CPU(s): 24-35,72-83
NUMA node3 CPU(s): 36-47,84-95
Flags:

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 48 49 50 51 52 53 54 55 56 57 58 59
node 0 size: 128152 MB
node 0 free: 120966 MB
node 1 cpus: 12 13 14 15 16 17 18 19 20 21 22 23 60 61 62 63 64 65 66 67 68 69 70 71
node 1 size: 128981 MB
node 1 free: 123866 MB
node 2 cpus: 24 25 26 27 28 29 30 31 32 33 34 35 72 73 74 75 76 77 78 79 80 81 82 83

(Continued on next page)
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xFusion 2288H V6 (Intel Xeon Gold 6336Y)

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**Test Date:** Mar-2022  
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**Platform Notes (Continued)**

- **node 2 size:** 129018 MB  
- **node 2 free:** 123422 MB  
- **node 3 cpus:** 36 37 38 39 40 41 42 43 44 45 46 47 48 74 85 86 87 88 89 90 91 92 93 94 95  
- **node 3 size:** 129016 MB  
- **node 3 free:** 123896 MB  
- **node distances:**  
  - **node 0:** 10 11 20 20  
  - **node 1:** 11 10 20 20  
  - **node 2:** 20 20 10 11  
  - **node 3:** 20 20 11 10

From `/proc/meminfo`  
- **MemTotal:** 527532988 kB  
- **HugePages_Total:** 0  
- **Hugepagesize:** 2048 kB

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

From `/etc/*release*` /etc/*version*  
- **os-release:**  
  - NAME="Red Hat Enterprise Linux"  
  - VERSION="8.4 (Ootpa)"  
  - ID="rhel"  
  - ID_LIKE="fedora"  
  - VERSION_ID="8.4"  
  - PLATFORM_ID="platform:el8"  
  - PRETTY_NAME="Red Hat Enterprise Linux 8.4 (Ootpa)"  
  - ANSI_COLOR="0;31"  
- **redhat-release:** Red Hat Enterprise Linux release 8.4 (Ootpa)  
- **system-release:** Red Hat Enterprise Linux release 8.4 (Ootpa)  
- **system-release-cpe:** cpe:/o:redhat:enterprise_linux:8.4:ga

**uname -a:**
```
Linux localhost.localdomain 4.18.0-305.el8.x86_64 #1 SMP Thu Apr 29 08:54:30 EDT 2021
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

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

### xFusion

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### Platform Notes (Continued)

- **CVE-2017-5753 (Spectre variant 1):**
  - Mitigation: usercopy/swaps 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 Mar 25 23:31**

**SPEC is set to: /spec2017**

- **Filesystem**
  - **/dev/sda3**
    - Type: xfs
    - Size: 420G
    - Used: 104G
    - Avail: 317G
    - Use%: 25%
    - Mounted on: /

**From /sys/devices/virtual/dmi/id**

- **Vendor:** XFUSION
- **Product:** 2288H V6
- **Product Family:** Whitley
- **Serial:** 1234567

**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:**

- 16x Samsung M393A4G43AB3-CWE 32 GB 2 rank 3200

**BIOS:**

- **BIOS Vendor:** INSYDE Corp.
- **BIOS Version:** 0.95
- **BIOS Date:** 12/22/2021
- **BIOS Revision:** 0.95

---

### Compiler Version Notes

```
C                | 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
```

---

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113

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Compiler Version Notes (Continued)

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<td>508.namd_r(base) 510.parest_r(base)</td>
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

C++, C                                    |
| 511.povray_r(base) 526.blender_r(base)   |

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

C++, C, Fortran                           |
| 507.cactuBSSN_r(base)                   |

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Fortran                                   |
| 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base) |

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Fortran, C                                |
| 521.wrf_r(base) 527.cam4_r(base)         |

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
Intel(R) 64, Version 2021.1 Build 20201112_000000
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xFusion

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</tbody>
</table>

Compiler Version Notes (Continued)

Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icx

Benchmarks using both C and C++:
icpx icx

Benchmarks using Fortran, C, and C++:
icpx icx ifort

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64
xC Fusion

xC Fusion 2288H V6 (Intel Xeon Gold 6336Y)

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**Base Optimization Flags**

C benchmarks:
- `w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-fflto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib`

C++ benchmarks:
- `w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib`

Fortran benchmarks:
- `w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div
-qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib`

Benchmarks using both Fortran and C:
- `w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-fflto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -O3 -ipo
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-mbranches-within-32B-boundaries -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib`

Benchmarks using both C and C++:
- `w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-fflto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib`

Benchmarks using Fortran, C, and C++:
- `w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-fflto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-mbranches-within-32B-boundaries -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/xFusion-Platform-Settings-ICX-V1.1.html
## SPEC CPU®2017 Floating Point Rate Result

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


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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 2022-03-26 07:06:39-0400.
Originally published on 2022-04-12.