## SPEC CPU®2017 Integer Rate Result

### xFusion

xFusion 5288 V6 (Intel Xeon Gold 6338N)

<table>
<thead>
<tr>
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<th>6488</th>
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<tbody>
<tr>
<td>Test Sponsor:</td>
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<td>Test Date:</td>
<td>Apr-2022</td>
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<td>Apr-2021</td>
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<td>Software Availability:</td>
<td>May-2021</td>
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<table>
<thead>
<tr>
<th>copies</th>
<th>SPECrate®2017_int_base =</th>
<th>SPECrate®2017_int_peak =</th>
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<tr>
<td>500.perlbench_r</td>
<td>128</td>
<td>Not Run</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>128</td>
<td></td>
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<tr>
<td>505.mcf_r</td>
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<td></td>
</tr>
<tr>
<td>520.omnetpp_r</td>
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<td></td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>128</td>
<td></td>
</tr>
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<td>525.x264_r</td>
<td>128</td>
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<td>531.deepsjeng_r</td>
<td>128</td>
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<tr>
<td>541.leela_r</td>
<td>128</td>
<td></td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>128</td>
<td></td>
</tr>
<tr>
<td>557.xz_r</td>
<td>128</td>
<td></td>
</tr>
</tbody>
</table>

### Hardware

**CPU Name:** Intel Xeon Gold 6338N  
**Max MHz:** 3500  
**Nominal:** 2200  
**Enabled:** 64 cores, 2 chips, 2 threads/core  
**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:** 48 MB I+D on chip per chip  
**Memory:** 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R, running at 2666)  
**Storage:** 1 x 960 GB SATA SSD  
**Other:** None

### Software

**OS:** Red Hat Enterprise Linux release 8.4 (Ootpa)  
4.18.0-305.el8.x86_64  
**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  
**Parallel:** No  
**Firmware:** Version 0.95 Released Dec-2021  
**File System:** xfs  
**System State:** Run level 3 (multi-user)  
**Base Pointers:** 64-bit  
**Peak Pointers:** Not Applicable  
**Other:** None  
**Power Management:** BIOS and OS set to prefer performance at the cost of additional power usage
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**Tested by:** xFusion  
**Software Availability:** May-2021

### Results Table

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</table>

**SPECrate®2017_int_base = 415**  
**SPECrate®2017_int_peak = Not Run**

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

### 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/lib/ia32"  
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:  
sync; echo 3>/proc/sys/vm/drop_caches  
runcpu command invoked through numactl i.e.:  
umactl --interleave=all runcpu <etc>

(Continued on next page)
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xFusion

xFusion 5288 V6 (Intel Xeon Gold 6338N)

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

Test Date: Apr-2022
Hardware Availability: Apr-2021
Software Availability: May-2021

General Notes (Continued)

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 982a61ec0915b55891ef0e16acaf64d
running on localhost.localdomain Sat Apr 9 11:33:14 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 6338N CPU @ 2.20GHz
        2 "physical id"s (chips)
        128 "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 : 32
    siblings : 64
    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
    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

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): 128
    On-line CPU(s) list: 0-127
    Thread(s) per core: 2
    Core(s) per socket: 32
    Socket(s): 2
    NUMA node(s): 4
    Vendor ID: GenuineIntel
    BIOS Vendor ID: Intel(R) Corporation

(Continued on next page)
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Platform Notes (Continued)

CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 6338N CPU @ 2.20GHz
BIOS Model name: Intel(R) Xeon(R) Gold 6338N CPU @ 2.20GHz
Stepping: 6
CPU MHz: 2800.080
BogoMIPS: 4400.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 49152K
NUMA node0 CPU(s): 0-15,64-79
NUMA node1 CPU(s): 16-31,80-95
NUMA node2 CPU(s): 32-47,96-111
NUMA node3 CPU(s): 48-63,112-127
Flags: fpu vme de pse tsc msr pae mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtsscp lm constant_tsc arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperf perfctr pni pclmulqdq dtes64 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 rdrnd lahf_lm abm 3nowprefetch cpuid_fault epb cat_l3 invpcid_single ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vmmvx fpxprec ept pef ad fs64sbase tsc_adjclk bmt bml hle avx2 smep bmi2 erms invpcid cm4 rdt_a avx512f avx512dq rdseed adx smap avx512sfma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl xsaves opt xsave xgetbv1 xsaveopt xsavec xsaves qemMMdd cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local split_lock_detect wbnoinvd dtherm ida arat pln pts hwp epp avx512vbmi umip pku ospke avx512_vbmi lcm vaes vpcm {}, avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid md_clear pconfig flush_lld arch_capabilities

/proc/cpuinfo cache data
cache size : 49152 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 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79
node 0 size: 128151 MB
node 0 free: 127555 MB
node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 80 81 82 83 84 85 86 87 88
node 1 size: 129017 MB
node 1 free: 128554 MB
node 2 cpus: 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 96 97 98 99 100 101 102
node 2 size: 129017 MB

(Continued on next page)
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**CPU2017 License:** 6488
**Test Sponsor:** xFusion
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**Platform Notes (Continued)**

- Node 2 free: 128304 MB
- Node 3 CPUs: 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127
- Node 3 size: 128977 MB
- Node 3 free: 128310 MB
- Node distances:
  - Node 0 1 2 3
  - 0: 10 11 20 20
  - 1: 11 10 20 20
  - 2: 20 20 10 11
  - 3: 20 20 11 10

From `/proc/meminfo`

- MemTotal: 527527236 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
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**Platform Notes (Continued)**

CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swappgs barriers and __user pointer sanitation

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 9 11:31

SPEC is set to: /spec2017

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
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<tbody>
<tr>
<td>/dev/sda3</td>
<td>xfs</td>
<td>420G</td>
<td>19G</td>
<td>402G</td>
<td>5%</td>
<td>/</td>
</tr>
</tbody>
</table>

From /sys/devices/virtual/dmi/id

Vendor: XFUSION
Product: 5288 V6
Product Family: Whitley
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:
16x Samsung M393A4K40DB3-CWE 32 GB 2 rank 3200, configured at 2666

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

(End of data from sysinfo program)

**Compiler Version Notes**

==================================================================================================
C | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)
  | 525.x264_r(base) 557.xz_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.

(Continued on next page)
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Compiler Version Notes (Continued)

==============================================================================
C++  | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
     | 541.leela_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 | 548.exchange2_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.
-----------------------------------------------------------------------------

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
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**Base Optimization Flags**

C benchmarks:

C++ benchmarks:

Fortran benchmarks:

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

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

http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.xml
http://www.spec.org/cpu2017/flags/xFusion-Platform-Settings-ICX-V1.1.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 CPU®2017 v1.1.8 on 2022-04-09 11:33:13-0400.
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