## SPEC CPU®2017 Integer Rate Result

**xFusion**

xFusion 1288H V5 (Intel Xeon Silver 4210R)

<table>
<thead>
<tr>
<th>CPU2017 License: 6488</th>
<th>Test Date: Jan-2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: xFusion</td>
<td>Hardware Availability: Apr-2019</td>
</tr>
<tr>
<td>Tested by: xFusion</td>
<td>Software Availability: May-2022</td>
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### SPECrate®2017_int_base = 135

### SPECrate®2017_int_peak = Not Run

### Hardware

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<tr>
<td>502.gcc_r 40</td>
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<tr>
<td>505.mcf_r 40</td>
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<tr>
<td>520.omnetpp_r 40</td>
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<tr>
<td>523.xalancbmk_r 40</td>
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<tr>
<td>525.x264_r 40</td>
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<tr>
<td>531.deepsjeng_r 40</td>
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<tr>
<td>541.leela_r 40</td>
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<tr>
<td>548.exchange2_r 40</td>
<td></td>
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<tr>
<td>557.xz_r 40</td>
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</tbody>
</table>

### Software

**OS:**  Red Hat Enterprise Linux release 8.4 (Ootpa)
4.18.0-305.el8.x86_64

**Compiler:**  C/C++: Version 2022.1 of Intel oneAPI DPC++/C++ Compiler for Linux;
Fortran: Version 2022.1 of Intel Fortran Compiler for Linux;

**Firmware:**  Version 8.37 Released Aug-2022

**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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**CPU Name:**  Intel Xeon Silver 4210R

**Max MHz:**  3200

**Nominal:**  2400

**Enabled:**  20 cores, 2 chips, 2 threads/core

**Orderable:**  1.2 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:**  13.75 MB I+D on chip per chip

**Other:**  None

**Memory:**  768 GB (24 x 32 GB 2Rx4 PC4-2933Y-R, running at 2400)

**Storage:**  1 x 960 GB SATA SSD

**Other:**  None
### Results Table

<table>
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</table>

### Compiler Notes

SPEC has ruled that the compiler used for this result was performing a compilation that specifically improves the performance of the 523.xalancbmk_r / 623.xalancbmk_s benchmarks using a priori knowledge of the SPEC code and dataset to perform a transformation that has narrow applicability.

In order to encourage optimizations that have wide applicability (see rule 1.4 https://www.spec.org/cpu2017/Docs/runrules.html#rule_1.4), SPEC will no longer publish results using this optimization.

This result is left in the SPEC results database for historical reference.

### 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:/spec2017/je5.0.1-32"
- MALLOC_CONF = "retain:true"
SPEC CPU®2017 Integer Rate Result

xFusion 1288H V5 (Intel Xeon Silver 4210R)

SPECrate®2017_int_base = 135
SPECrate®2017_int_peak = Not Run

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

General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
memory using Red Hat Enterprise Linux 8.4
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Files system page cache synced and cleared with:
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:
Power Policy Set to Performance
XPT Prefetch set to Enabled
Sysinfo program /spec2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on localhost.localdomain Mon Jan 16 11:40:45 2023
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) Silver 4210R CPU @ 2.40GHz
  2 "physical id"s (chips)
  40 "processors"
core, siblings (Caution: counting these is hw and system dependent. The following
excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 10
siblings : 20
  physical 0: cores 0 1 2 3 4 8 9 10 11 12
  physical 1: cores 0 1 2 3 4 8 9 10 11 12
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): 40
  On-line CPU(s) list: 0-39
  Thread(s) per core: 2
  Core(s) per socket: 10
  Socket(s): 2
  NUMA node(s): 2
  Vendor ID: GenuineIntel
  BIOS Vendor ID: Intel(R) Corporation
  CPU family: 6
  Model: 85
  Model name: Intel(R) Xeon(R) Silver 4210R CPU @ 2.40GHz
  BIOS Model name: Intel(R) Xeon(R) Silver 4210R CPU @ 2.40GHz
  Stepping: 7
  CPU MHz: 2900.010
  CPU max MHz: 3200.0000

(Continued on next page)
Platform Notes (Continued)

CPU min MHZ:         1000.0000
BogoMIPS:            4800.00
Virtualization:      VT-x
L1d cache:           32K
L1i cache:           32K
L2 cache:            1024K
L3 cache:            14080K
NUMA node0 CPU(s):   0-9,20-29
NUMA node1 CPU(s):   10-19,30-39
Flags:               fpu vme de pse tsc msr pae mce cmov
                      pat pse36 clflush dts epx mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
                      rdsc v Tentacle maxm smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm
                      pcid dca sse2 lssе_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
                      avx f16c
                      rdrand lahf_lm abm 3dnowprefetch cpuid_fault epbi cat_13 cdp_13
                      invpcid single znab
                      mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vmni flexpriority ept vpid
                      ept_ad
                      fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid cqm mpx
                      rdt_a avx512f
                      avx512dq rdseed adx smap cdflushopt clwb intel_pt avx512cd avx512bw
                      avx512vl
                      xsaveopt xaves opt xgetbv1 xsaves cqm_l1c cqm_occup_l1c cqm_mb_total
                      cqm_mb_local
dtherm ida arat pin pts pkp ospe avx512_vnni md_clear flush_lid arch_capabilities

/proc/cpuinfo cache data

From /proc/meminfo
    MemTotal:       790809192 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

From /etc/*release* /etc/*version*
    os-release:
        NAME="Red Hat Enterprise Linux"
        VERSION="8.4 (Ootpa)
        ID="redhat"
        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)

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xFusion

xFusion 1288H V5 (Intel Xeon Silver 4210R)

SPECRate®2017_int_base = 135

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Platform Notes (Continued)

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):                        KVM: Mitigation: Split huge pages
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
CVE-2018-5753 (Spectre variant 1):                      Mitigation: usercopy/swaps
CVE-2018-5715 (Spectre variant 2):                      Mitigation: Enhanced IBRS, IBPB:
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected

run-level 3 Jan 16 11:39
SPEC is set to: /spec2017

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda4      xfs   859G   36G  824G   5% /

From /sys/devices/virtual/dmi/id
Vendor:         XFSION
Product:        1288H V5
Product Family: Purley
Serial:         Serial

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:
24x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2400

BIOS:
    BIOS Vendor:       XFSION
    BIOS Version:      8.37
    BIOS Date:         08/25/2022
    BIOS Revision:     8.37

(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 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

(Continued on next page)
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 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------------------------------

Fortran | 548.exchange2_r(base)
-----------------------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
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-----------------------------------------------------------------------------------------------

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifx

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
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4

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xFusion

xFusion 1288H V5 (Intel Xeon Silver 4210R)

| SPECrate®2017_int_base = 135 |
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**CPU2017 License:** 6488  
**Test Date:** Jan-2023

**Test Sponsor:** xFusion  
**Hardware Availability:** Apr-2019

**Tested by:** xFusion  
**Software Availability:** May-2022

### Base Optimization Flags (Continued)

C benchmarks (continued):
- `-L/usr/local/intel/compiler/2022.1.0/linux/compiler/lib/intel64_lin`
- `-lqkmalloc`

C++ benchmarks:
- `-w` `-m64` `-Wl,-z,muldefs` `-xCORE-AVX512` `-O3` `-ffast-math` `-flto`
- `-mfpmath=sse` `-funroll-loops` `-qopt-mem-layout-trans=4`
- `-L/usr/local/intel/compiler/2022.1.0/linux/compiler/lib/intel64_lin`
- `-lqkmalloc`

Fortran benchmarks:
- `-w` `-m64` `-Wl,-z,muldefs` `-xCORE-AVX512` `-O3` `-ffast-math` `-flto`
- `-mfpmath=sse` `-funroll-loops` `-qopt-mem-layout-trans=4`
- `-nostandard-realloc-lhs` `-align array32byte` `-auto`
- `-L/usr/local/intel/compiler/2022.1.0/linux/compiler/lib/intel64_lin`
- `-lqkmalloc`

The flags files that were used to format this result can be browsed at:

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.

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