xFusion

xFusion 1288H V5 (Intel Xeon Gold 6230R)

SPECrater®2017_int_base = 317
SPECrater®2017_int_peak = Not Run

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion
Test Date: Mar-2022
Hardware Availability: Feb-2020
Software Availability: May-2021

Copies

500.perlbench_r 104
502.gcc_r 104
505.mcf_r 104
520.omnetpp_r 104
523.xalancbmk_r 104
525.x264_r 104
531.deepsjeng_r 104
541.iee898_r 104
548.exchange2_r 104
557.xz_r 104

SPECrate®2017_int_base (317)

Hardware
CPU Name: Intel Xeon Gold 6230R
Max MHz: 4000
Nominal: 2100
Enabled: 52 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
Cache L1: 32 KB I + 32 KB D on chip per core
L2: 1 MB I+D on chip per core
L3: 35.75 MB I+D on chip per chip
Other: None
Memory: 768 GB (24 x 32 GB 2Rx4 PC4-2933Y-R)
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 8.23 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
SPEC CPU®2017 Integer Rate Result

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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
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<th>Seconds</th>
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<td>193</td>
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<td>193</td>
<td>581</td>
<td>193</td>
</tr>
</tbody>
</table>

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.:
numactl --interleave=all runcpu <etc>

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

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**xFusion**

**xFusion 1288H V5 (Intel Xeon Gold 6230R)**

<table>
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CPU2017 License: 6488
Test Sponsor: xFusion
Test Date: Mar-2022
Tested by: xFusion
Hardware Availability: Feb-2020
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:
- Power Policy Set to Performance
- SNC Set to Enabled
- IMC Interleaving set to 1-way interleave
- XPT Prefetch set to Enabled

Sysinfo program /spec2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aca54d
running on localhost.localdomain Thu Mar 31 06:31:21 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 6230R CPU @ 2.10GHz
  - 2 "physical id"s (chips)
  - 104 "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 : 26
  - siblings : 52
  - physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25 26 27 28 29
  - physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25 26 27 28 29

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): 104
- On-line CPU(s) list: 0-103
- Thread(s) per core: 2
- Core(s) per socket: 26
- Socket(s): 2
- NUMA node(s): 4

(Continued on next page)
SPEC CPU®2017 Integer Rate Result

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Test Date: Mar-2022
Hardware Availability: Feb-2020
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Platform Notes (Continued)

Vendor ID: GenuineIntel
BIOS Vendor ID: Intel(R) Corporation
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6230R CPU @ 2.10GHz
BIOS Model name: Intel(R) Xeon(R) Gold 6230R CPU @ 2.10GHz
Stepping: 7
CPU MHz: 3000.009
CPU max MHz: 4000.000
CPU min MHz: 1000.000
BogoMIPS: 4200.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 36608K
NUMA node0 CPU(s): 0-3,7-9,13-15,20-22,52-55,59-61,65-67,72-74
NUMA node1 CPU(s): 4-6,10-12,16-19,23-25,29-31,33-35,39-41,46-48,52-54,58-60,62-64,68-71,75-77
NUMA node2 CPU(s): 26-29,33-35,39-41,46-48,52-54,58-60,62-64,68-71,75-77
NUMA node3 CPU(s): 30-32,36-38,42-45,49-51,52-54,58-60,62-64,68-71,75-77
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
        aperf mp nuca

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 7 8 9 13 14 15 20 21 22 52 53 54 55 59 60 61 65 66 67 72 73 74
node 0 size: 191707 MB
node 0 free: 184535 MB
node 1 cpus: 4 5 6 10 11 12 16 17 18 19 23 24 25 56 57 58 62 63 64 68 69 70 71 75 76 77
node 1 size: 193530 MB
node 1 free: 193044 MB
node 2 cpus: 26 27 28 29 33 34 35 39 40 41 46 47 48 78 79 80 81 85 86 87 91 92 93 98 99
node 2 size: 193493 MB

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

**xFusion**  
**xFusion 1288H V5 (Intel Xeon Gold 6230R)**  

<table>
<thead>
<tr>
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<th>Value</th>
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<td>Not Run</td>
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</tbody>
</table>

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

**Platform Notes (Continued)**

```plaintext
node 2 free: 193050 MB  
node 3 cpus: 30 31 32 36 37 38 42 43 44 45 49 50 51 82 83 84 88 89 90 94 95 96 97 101 102 103  
node 3 size: 193529 MB  
node 3 free: 193131 MB  
node distances:  
node 0 1 2 3  
0: 10 11 21 21  
1: 11 10 21 21  
2: 21 21 10 11  
3: 21 21 11 10
```

From `/proc/meminfo`  
MemTotal: 790795004 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="8.4 (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): KVM: Mitigation: Split huge pages  
CVE-2018-3620 (L1 Terminal Fault): Not affected  
Microarchitectural Data Sampling: Not affected  
CVE-2017-5754 (Meltdown): Not affected

(Continued on next page)
SPEC CPU®2017 Integer Rate Result

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Platform Notes (Continued)

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):
Mitigation: TSX disabled

run-level 3 Mar 31 06:30

SPEC is set to: /spec2017

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda3      xfs   859G  127G  733G  15% /

From /sys/devices/virtual/dmi/id
Vendor:         XFUSION
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:
22x Hynix HMA84GR7CJR4N-WM 32 GB 2 rank 2933
2x Hynix HMA84GR7JJR4N-WM 32 GB 2 rank 2933

BIOS:
BIOS Vendor:    INSYDE Corp.
BIOS Version:   8.23
BIOS Date:      12/30/2021
BIOS Revision:  8.23

(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,
xFusion

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Compiler Version Notes (Continued)

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Compiler Version Notes (Continued)

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

-----------------------------------------------------------------------------
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
531.deepsjeng_r -DSPEC_LP64
541.leela_r -DSPEC_LP64
548.exchange2_r -DSPEC_LP64

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#### Base Portability Flags (Continued)

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`
- `-mbranches-within-32B-boundaries`
- `-L/opt/intel/oneapi/compiler/2021.1.1/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`
- `-mbranches-within-32B-boundaries`
- `-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin`
- `-lqkmalloc`

**Fortran benchmarks:**
- `-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div`
- `-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte`
- `-auto -mbranches-within-32B-boundaries`
- `-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin`
- `-lqkmalloc`

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


http://www.spec.org/cpu2017/flags/xFusion-Platform-Settings-CSL-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-CSL-V1.1.xml

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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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