**xFusion**

**xFusion 1288H V6 (Intel Xeon Gold 6330N)**

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base =</th>
<th>359</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak =</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

**CPUT2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion

**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

**Hardware**

- **CPU Name:** Intel Xeon Gold 6330N  
  **Max MHz:** 3400

- **Memory:** 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R, running at 2666)

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

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>Apr-2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Apr-2021</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>May-2021</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base (359)</th>
</tr>
</thead>
</table>

| Copies | 0 | 40.0 | 80.0 | 120 | 160 | 200 | 240 | 280 | 320 | 360 | 400 | 440 | 480 | 520 | 560 | 600 | 640 | 680 | 720 | 760 |
|--------|---|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 500.perlbench_r | 112 | | | | | | | | | | | | | | | | | | | |
| 502.gcc_r | 112 | 285 | | | | | | | | | | | | | | | | | | |
| 505.mcf_r | 112 | | 228 | | | | | | | | | | | | | | | | | |
| 520.omnetpp_r | 112 | | | | 574 | | | | | | | | | | | | | | | |
| 523.xalancbmk_r | 112 | | | | 456 | | | | | | | | | | | | | | | |
| 525.x264_r | 112 | | | | | 739 | | | | | | | | | | | | | | |
| 531.deepsjeng_r | 112 | | | | | 742 | | | | | | | | | | | | | | |
| 541.leela_r | 112 | | | | | 267 | | | | | | | | | | | | | | |
| 548.exchange2_r | 112 | | | | | | 206 | | | | | | | | | | | | | |
| 557.xz_r | 112 | | | | | | | | | | | | | | | | | | | |

**Copies**: 359

**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

**Hardware**

- **CPU Name:** Intel Xeon Gold 6330N  
  **Max MHz:** 3400

- **Memory:** 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R, running at 2666)

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

**Test Date:** Apr-2022  
**Hardware Availability:** Apr-2021  
**Software Availability:** May-2021
SPEC CPU®2017 Integer Rate Result
Copyright 2017-2022 Standard Performance Evaluation Corporation

xFusion

xFusion 1288H V6 (Intel Xeon Gold 6330N)

SPECrate®2017_int_base = 359
SPECrate®2017_int_peak = Not Run

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>112</td>
<td>698</td>
<td>255</td>
<td>697</td>
<td>256</td>
<td>698</td>
<td>255</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>112</td>
<td>553</td>
<td>287</td>
<td>553</td>
<td>287</td>
<td>551</td>
<td>288</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>112</td>
<td>316</td>
<td>573</td>
<td>316</td>
<td>574</td>
<td>315</td>
<td>575</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>112</td>
<td>644</td>
<td>228</td>
<td>647</td>
<td>227</td>
<td>645</td>
<td>228</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>112</td>
<td>258</td>
<td>458</td>
<td>260</td>
<td>455</td>
<td>260</td>
<td>456</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>112</td>
<td>266</td>
<td>736</td>
<td>265</td>
<td>741</td>
<td>265</td>
<td>739</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>112</td>
<td>472</td>
<td>272</td>
<td>473</td>
<td>271</td>
<td>473</td>
<td>271</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>112</td>
<td>697</td>
<td>266</td>
<td>695</td>
<td>267</td>
<td>694</td>
<td>267</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>112</td>
<td>397</td>
<td>740</td>
<td>395</td>
<td>742</td>
<td>395</td>
<td>742</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>112</td>
<td>588</td>
<td>206</td>
<td>587</td>
<td>206</td>
<td>590</td>
<td>205</td>
</tr>
</tbody>
</table>

SPECrate®2017_int_base = 359
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.:
numactl --interleave=all runcpu <etc>

(Continued on next page)
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 982a61ec0915b55891ef0e16acac64d
running on localhost.localdomain Wed Apr 6 13:21:22 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 6330N CPU @ 2.20GHz
  2 "physical id"s (chips)
  112 "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 : 28
siblings : 56
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
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

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): 112
On-line CPU(s) list: 0-111
Thread(s) per core: 2
Core(s) per socket: 28
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
BIOS Vendor ID: Intel(R) Corporation

(Continued on next page)
xFusion
xFusion 1288H V6 (Intel Xeon Gold 6330N)

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

SPECrate®2017_int_base = 359
SPECrate®2017_int_peak = Not Run

Platform Notes (Continued)

CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 6330N CPU @ 2.20GHz
BIOS Model name: Intel(R) Xeon(R) Gold 6330N CPU @ 2.20GHz
Stepping: 6
CPU MHz: 2600.000
BogoMIPS: 4400.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 43008K
NUMA node0 CPU(s): 0-13,56-69
NUMA node1 CPU(s): 14-27,70-83
NUMA node2 CPU(s): 28-41,84-97
NUMA node3 CPU(s): 42-55,98-111
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
aperfperf 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 fl64
rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 invpcid_single ssbd mba ibrs
ibpb stibp ibrs enhanced tpr_shadow vni flexpriority ept vpid ept_ad fsgsbase
tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid cmq rdt_a avx512f avx512dq rdseed
adx smap avx512fma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl
xsaveopt xsaves xsavec xsaves cqm_llc cqm_occupy_llc cqm_mbm_total cqm_mbm_local
split_lock_detect wbnoinvd dtherm ida arat pln pts hwp epp avx512vbmi umip kpu ospke
avx512_vbmi2 gfn vaes vpcmwlqdg avx512_vnni avx512_bitalg tme avx512_vpopcntdq
la57 rdpid fsrm md_clear pconfig flush_lld arch_capabilities

/proc/cpuinfo cache data
cache size: 43008 KB

From numacl --hardware
WARNING: a numacl '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 56 57 58 59 60 61 62 63 64 65 66 67 68 69
node 0 size: 128152 MB
node 0 free: 127615 MB
node 1 cpus: 14 15 16 17 18 19 20 21 22 23 24 25 26 27 70 71 72 73 74 75 76 77 78 79 80
 node 1 size: 128017 MB
 node 1 free: 128337 MB
node 2 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 84 85 86 87 88 89 90 91 92 93 94
 node 2 size: 129017 MB
 node 2 free: 128459 MB

(Continued on next page)
xFusion

xFusion 1288H V6 (Intel Xeon Gold 6330N)

SPECrate®2017_int_base = 359
SPECrate®2017_int_peak = Not Run

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

Platform Notes (Continued)

node 3 cpus: 42 43 44 45 46 47 48 49 50 51 52 53 54 55 98 99 100 101 102 103 104 105
106 107 108 109 110 111
node 3 size: 128978 MB
node 3 free: 128511 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: 527530692 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
CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swapgs

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

xFusion

xFusion 1288H V6 (Intel Xeon Gold 6330N)  SPECrate®2017_int_base = 359

SPECrate®2017_int_peak = Not Run

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

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

Platform Notes (Continued)

barriers and __user pointer sanitization
Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

CVE-2017-5715 (Spectre variant 2):

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

run-level 3 Apr 6 13:19

SPEC is set to: /spec2017

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda3      xfs   420G   19G  402G   5% /

From /sys/devices/virtual/dmi/id
Vendor:         XFUSION
Product:        1288H 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)
## SPEC CPU®2017 Integer Rate Result

**xFusion**  
xFusion 1288H V6 (Intel Xeon Gold 6330N)

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base</th>
<th>359</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

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

**SPEC CPU®2017 Integer Rate Result**

Copyright 2017-2022 Standard Performance Evaluation Corporation

xFusion

xFusion 1288H V6 (Intel Xeon Gold 6330N)

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 359</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak = Not Run</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU2017 License: 6488</th>
<th>Test Date: Apr-2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: xFusion</td>
<td>Hardware Availability: Apr-2021</td>
</tr>
<tr>
<td>Tested by: xFusion</td>
<td>Software Availability: May-2021</td>
</tr>
</tbody>
</table>

**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:


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


SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 2022-04-06 13:21:21-0400.
Originally published on 2022-04-27.