# SPEC CPU®2017 Integer Speed Result

##xFusion

xFusion 2288H V6 (Intel Xeon Gold 6330N)

### SPECspeed®2017_int_base = 11.7

SPECspeed®2017_int_peak = Not Run

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s 56</td>
<td>11.0</td>
<td>Not Run</td>
</tr>
<tr>
<td>602.gcc_s 56</td>
<td>11.8</td>
<td>20.2</td>
</tr>
<tr>
<td>605.mcf_s 56</td>
<td>13.2</td>
<td>16.8</td>
</tr>
<tr>
<td>620.omnetpp_s 56</td>
<td>5.84</td>
<td>23.0</td>
</tr>
<tr>
<td>623.xalancbmk_s 56</td>
<td>4.73</td>
<td></td>
</tr>
<tr>
<td>625.x264_s 56</td>
<td>18.9</td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s 56</td>
<td>11.0</td>
<td></td>
</tr>
<tr>
<td>641.leela_s 56</td>
<td>7.01</td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s 56</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>657.xz_s 56</td>
<td>24.0</td>
<td></td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon Gold 6330N
- **Max MHz:** 3400
- **Nominal:** 2200
- **Enabled:** 56 cores, 2 chips
- **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:** 42 MB I+D on chip per chip
- **Other:** None
- **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:** Yes
- **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:** jemalloc memory allocator V5.0.1
- **Power Management:** BIOS and OS set to prefer performance at the cost of additional power usage

---

*xNotes:*

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

---

*xNotes:*

- **Test Date:** Apr-2022
- **Test Sponsor:** xFusion
- **Hardware Availability:** Apr-2021
- **Tested by:** xFusion
- **Software Availability:** May-2021
SPEC CPU®2017 Integer Speed Result
Copyright 2017-2022 Standard Performance Evaluation Corporation

xFusion

xFusion 2288H V6 (Intel Xeon Gold 6330N)

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>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>56</td>
<td>255</td>
<td>6.96</td>
<td>253</td>
<td>7.01</td>
<td>253</td>
<td>7.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>56</td>
<td>361</td>
<td>11.0</td>
<td>365</td>
<td>10.9</td>
<td>363</td>
<td>11.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>56</td>
<td>236</td>
<td>20.0</td>
<td>234</td>
<td>20.2</td>
<td>234</td>
<td>20.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>56</td>
<td>137</td>
<td>11.9</td>
<td>140</td>
<td>11.7</td>
<td>139</td>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>56</td>
<td>107</td>
<td>13.2</td>
<td>107</td>
<td>13.3</td>
<td>109</td>
<td>13.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>625.x264_s</td>
<td>56</td>
<td>106</td>
<td>16.7</td>
<td>105</td>
<td>16.8</td>
<td>105</td>
<td>16.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>56</td>
<td>245</td>
<td>5.84</td>
<td>245</td>
<td>5.84</td>
<td>245</td>
<td>5.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>641.leela_s</td>
<td>56</td>
<td>361</td>
<td>4.73</td>
<td>361</td>
<td>4.73</td>
<td>363</td>
<td>4.70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>56</td>
<td>156</td>
<td>18.8</td>
<td>156</td>
<td>18.9</td>
<td>156</td>
<td>18.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td>56</td>
<td>269</td>
<td>23.0</td>
<td>270</td>
<td>22.9</td>
<td>268</td>
<td>23.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SPECspeed®2017_int_base = 11.7
SPECspeed®2017_int_peak = Not Run

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

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:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/spec2017/lib/intel64:/spec2017/je5.0.1-64"
MALLOCONF = "retain:true"
OMP_STACKSIZE = "192M"

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
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.
jemalloc, a general purpose malloc implementation built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

(Continued on next page)
xFusion

xFusion 2288H V6 (Intel Xeon Gold 6330N)

| SPECspeed®2017_int_base | 11.7 |
| SPECspeed®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 |

**General Notes (Continued)**


**Platform Notes**

BIOS configuration:
Performance Profile Set to Load Balance
Hyper-Threading Set to Disabled

Sysinfo program /spec2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aaca64d
running on localhost.localdomain Thu Apr 7 16:38:33 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)
  56 "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 : 28
  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): 56
On-line CPU(s) list: 0-55
Thread(s) per core: 1
Core(s) per socket: 28
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
BIOS Vendor ID: Intel(R) Corporation
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

(Continued on next page)
xFusion

xFusion 2288H V6 (Intel Xeon Gold 6330N)

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

SPECspeed®2017_int_base = 11.7
SPECspeed®2017_int_peak = Not Run

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

Platform Notes (Continued)

CPU MHz: 2413.019
CPU max MHz: 2201.0000
CPU min MHz: 800.0000
BogoMIPS: 4400.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 43008K
NUMA node0 CPU(s): 0-27
NUMA node1 CPU(s): 28-55
Flags: fpu vme de pse tsc msr pae mca cmov pat pse36 clflush dtsc acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtsscp lm constant_tsc art arch_perfmon pebs bts rep_good noopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtrm pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_13 invpcid_single ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase ts ck_adjust bmi1 hle avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl xsaveopt xsaveic xgetbv1 xsavees cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local split_lock_detect wboinovd dtherm ida arat pin pts avx512vmbmi umip pku ospke avx512_vbmi2 gfnl vaes vplmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid fsrc md_clear pconfig flush_l1d arch_capabilities

/proc/cpuinfo cache data
  cache size : 43008 KB

From numactl --hardware
WARNING: a numactl 'node' might or might not correspond to a physical chip.
  available: 2 nodes (0-1)
  node 0 cpus: 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
  node 0 size: 257176 MB
  node 0 free: 256547 MB
  node 1 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
  53 54 55
  node 1 size: 258002 MB
  node 1 free: 257066 MB
  node distances:
    node 0 1
    0: 10 20
    1: 20 10

From /proc/meminfo
  MemTotal: 527543008 KB
  HugePages_Total: 0
  Hugepagesize: 2048 KB

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

xFusion

xFusion 2288H V6 (Intel Xeon Gold 6330N)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>11.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

---

**Platform Notes (Continued)**

/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): 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/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 Apr 7 16:36

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>
</tr>
</thead>
<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>

(Continued on next page)
**Platform Notes (Continued)**

From /sys/devices/virtual/dmi/id
Vendor:        XFUSION
Product:       2288H 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    600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base)
     625.x264_s(base) 657.xz_s(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++   620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
      641.leela_s(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  648.exchange2_s(base)
```

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on

(Continued on next page)
xFusion

xFusion 2288H V6 (Intel Xeon Gold 6330N)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>11.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

Compiler Version Notes (Continued)

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

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-DSPEC_OPENMP -std=c11 -m64 -fiopenmp -Wl,-z,muldefs -xCORE-AVX512
-O3 -ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:
-DSPEC_OPENMP -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/
xFusion
xFusion 2288H V6 (Intel Xeon Gold 6330N)

<table>
<thead>
<tr>
<th>CPU2017 License: 6488</th>
<th>SPECspeed(^{2017})_int_base = 11.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: xFusion</td>
<td>SPECspeed(^{2017})_int_peak = Not Run</td>
</tr>
<tr>
<td>Tested by: xFusion</td>
<td>Test Date: Apr-2022</td>
</tr>
<tr>
<td></td>
<td>Hardware Availability: Apr-2021</td>
</tr>
<tr>
<td></td>
<td>Software Availability: May-2021</td>
</tr>
</tbody>
</table>

**Base Optimization Flags (Continued)**

C++ benchmarks (continued):
- \(-lqkmalloc\)

Fortran benchmarks:
- \(-m64 -xCORE-AVX512 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4\)
- \(-nostandard-realloc-lhs -align array32byte -auto\)
- \(-mbranches-within-32B-boundaries\)

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

SPEC CPU and SPECspeed 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 2022-04-07 16:38:33-0400.
Originally published on 2022-04-27.