**xFusion**

**xFusion 1288H V5 (Intel Xeon Platinum 8260)**

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base =  291</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak = Not Run</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion  
**Test Date:** Apr-2022  
**Hardware Availability:** Apr-2019  
**Software Availability:** Sep-2021

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECrate®2017_int_base (291)</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>96</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>96</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>96</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>96</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>96</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>96</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>96</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>96</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>96</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>96</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon Platinum 8260  
- **Max MHz:** 3900  
- **Nominal:** 2400  
- **Enabled:** 48 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 2021.4.0 of Intel oneAPI DPC++/C++  
  Compiler Build 20210924 for Linux;  
  Fortran: Version 2021.4.0 of Intel Fortran  
  Compiler Classic Build 20210910 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
Copyright 2017-2022 Standard Performance Evaluation Corporation

xFusion

xFusion 1288H V5 (Intel Xeon Platinum 8260)

SPECrate®2017_int_base = 291
SPECrate®2017_int_peak = Not Run

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

Test Date: Apr-2022
Hardware Availability: Apr-2019
Software Availability: Sep-2021

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>96</td>
<td>780</td>
<td>196</td>
<td>780</td>
<td>196</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>96</td>
<td>586</td>
<td>232</td>
<td>586</td>
<td>232</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>96</td>
<td>318</td>
<td>488</td>
<td>319</td>
<td>486</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>96</td>
<td>641</td>
<td>197</td>
<td>641</td>
<td>197</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>96</td>
<td>281</td>
<td>361</td>
<td>279</td>
<td>363</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>96</td>
<td>284</td>
<td>592</td>
<td>285</td>
<td>590</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>96</td>
<td>485</td>
<td>227</td>
<td>485</td>
<td>227</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>96</td>
<td>736</td>
<td>216</td>
<td>733</td>
<td>217</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>96</td>
<td>470</td>
<td>536</td>
<td>470</td>
<td>535</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>96</td>
<td>583</td>
<td>178</td>
<td>590</td>
<td>176</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:/spec2017/je5.0.1-32"
MALLOCONF = "retain:true"

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
Filesystem page cache synced and cleared with:
sync; echo 3> /proc/sys/vm/drop_caches
runcpu command invoked through numactl i.e.:
General Notes (Continued)

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
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 982a61ec0915b55891ef0e16a9acfc64d
running on localhost.localdomain Sat Apr 23 10:06:15 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) Platinum 8260 CPU @ 2.40GHz
  2 "physical id"s (chips)  
  96 "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 : 24
  siblings : 48
  physical 0: cores 0 1 2 3 4 5 6 9 10 11 12 13 16 17 18 19 20 21 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 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): 96
On-line CPU(s) list: 0-95
Thread(s) per core: 2
Core(s) per socket: 24
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel

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

xFusion

xFusion 1288H V5 (Intel Xeon Platinum 8260)

SPEC CPU®2017 License: 6488
Test Sponsor: xFusion
Test Date: Apr-2022
Tested by: xFusion

SPECrate®2017_int_base = 291
SPECrate®2017_int_peak = Not Run

CPU2017 License: 6488
Test Sponsor: xFusion
Test Date: Apr-2022
Hardware Availability: Apr-2019
Software Availability: Sep-2021

Platform Notes (Continued)

BIOS Vendor ID: Intel(R) Corporation
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Platinum 8260 CPU @ 2.40GHz
BIOS Model name: Intel(R) Xeon(R) Platinum 8260 CPU @ 2.40GHz
Stepping: 7
CPU MHz: 3100.022
CPU max MHz: 3900.0000
CPU min MHz: 1000.0000
BogoMIPS: 4800.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 36608K
NUMA node0 CPU(s): 0-3,7,8,12-14,18-20,48-51,55,56,60-62,66-68
NUMA node1 CPU(s): 4-6,9-11,15-17,21-23,52-54,57-59,63-65,69-71
NUMA node2 CPU(s): 24-26,31-33,37-39,43,44,72-75,79-81,85-87,91,92
NUMA node3 CPU(s): 28-30,34-36,40-42,45-47,76-78,82-84,88-90,93-95
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 pdelgb rtsc
lmm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmerf pni pclmulqdq dtes64 ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm
pcid dcasse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c
rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_13 cdp_13 invpcid_single ssbd
mba ibrs ibpbb stibp ibrs_enhanced trp_shadow vmml flexpriority ept vpid ept_ad
fsrevbse tsc_adjust bml1 hle avx2 smep bmi2 erms invpcid cmq mxr dtd_a avx512f
avx512dq rsdseed adv smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl
xsaveopt xsaves xegetbvl xsaves cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local
dtherm ida arat pln pts pku ospke avx512_vnni md_clear flush_lld arch_capabilities

/proc/cpuinfo cache data
cache size: 36608 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 7 8 12 13 14 18 19 20 48 49 50 51 55 56 60 61 62 66 67 68
node 0 size: 191708 MB
node 0 free: 185462 MB
node 1 cpus: 4 5 6 9 10 11 15 16 17 21 22 23 52 53 54 57 58 59 63 64 65 69 70 71
node 1 size: 193530 MB
node 1 free: 192190 MB
node 2 cpus: 24 25 26 27 31 32 33 37 38 39 43 44 72 73 74 75 79 80 81 85 86 87 91 92
node 2 size: 193493 MB
node 2 free: 193037 MB
node 3 cpus: 28 29 30 34 35 36 40 41 42 45 46 47 76 77 78 82 83 84 88 89 90 93 94 95

(Continued on next page)
xFusion

xFusion 1288H V5 (Intel Xeon Platinum 8260)

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base</th>
<th>291</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-2019 |
| Software Availability: | Sep-2021 |

Platform Notes (Continued)

node 3 size: 193530 MB
node 3 free: 193123 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: 790796732 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
  Not affected
CVE-2018-3620 (L1 Terminal Fault):
  Not affected
Microarchitectural Data Sampling:
  Not affected
CVE-2017-5754 (Meltdown):
CVE-2018-3639 (Speculative Store Bypass):
  Mitigation: Speculative Store Bypass disabled via prctl and seccomp

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

xFusion

xFusion 1288H V5 (Intel Xeon Platinum 8260)

SPECraten®2017_int_base = 291
SPECraten®2017_int_peak = Not Run

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

Test Date: Apr-2022
Hardware Availability: Apr-2019
Software Availability: Sep-2021

Platform Notes (Continued)

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 Apr 23 10:05

SPEC is set to: /spec2017

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda4      xfs   859G   30G  830G   4% /

From /sys/devices/virtual/dmi/id
Vendor:         XFUSION
Product:        5288 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,
Version 2021.4.0 Build 20210924
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.

(Continued on next page)
xFusion
xFusion 1288H V5 (Intel Xeon Platinum 8260)

SPECrate®2017_int_base = 291
SPECrate®2017_int_peak = Not Run

<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-2019</td>
</tr>
<tr>
<td>Tested by: xFusion</td>
<td>Software Availability: Sep-2021</td>
</tr>
</tbody>
</table>

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 2021.4.0 Build 20210924
Copyright (C) 1985-2021 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 2021.4.0 Build 20210910_000000
Copyright (C) 1985-2021 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
```

```bash
```
**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/usr/local/intel/compiler/2021.4.0/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`
- `-mbranches-within-32B-boundaries`
- `-L/usr/local/intel/compiler/2021.4.0/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/usr/local/intel/compiler/2021.4.0/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

---

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 2022-04-23 10:06:14-0400.