xFusion

xFusion 2288H V6 (Intel Xeon Platinum 8352S)

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

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

Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench</td>
<td>64</td>
</tr>
<tr>
<td>602.gcc</td>
<td>64</td>
</tr>
<tr>
<td>605.mcf</td>
<td>64</td>
</tr>
<tr>
<td>620.omnetpp</td>
<td>64</td>
</tr>
<tr>
<td>623.xalancbmk</td>
<td>64</td>
</tr>
<tr>
<td>625.x264</td>
<td>64</td>
</tr>
<tr>
<td>631.deepsjeng</td>
<td>64</td>
</tr>
<tr>
<td>641.leela</td>
<td>64</td>
</tr>
<tr>
<td>648.exchange2</td>
<td>64</td>
</tr>
<tr>
<td>657.xz</td>
<td>64</td>
</tr>
</tbody>
</table>

--- SPECspeed®2017_int_base (11.8) ---

<table>
<thead>
<tr>
<th>Software</th>
<th>OS: Red Hat Enterprise Linux release 8.4 (Ootpa) 4.18.0-305.el8.x86_64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>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</td>
</tr>
<tr>
<td>Parallel:</td>
<td>Yes</td>
</tr>
<tr>
<td>Firmware:</td>
<td>Version 0.95 Released Dec-2021</td>
</tr>
<tr>
<td>File System:</td>
<td>xfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Other:</td>
<td>jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td>Power Management:</td>
<td>BIOS and OS set to prefer performance at the cost of additional power usage</td>
</tr>
</tbody>
</table>

--- Hardware ---

CPU Name: Intel Xeon Platinum 8352S
Max MHz: 3400
Nominal: 2200
Enabled: 64 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: 48 MB I+D on chip per chip
Other: None
Memory: 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R)
Storage: 1 x 960 GB SATA SSD
Other: None
# SPEC CPU®2017 Integer Speed Result

**xFusion**

**xFusion 2288H V6 (Intel Xeon Platinum 8352S)**

**SPECspeed®2017_int_base** = 11.8

**SPECspeed®2017_int_peak** = Not Run

---

## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Ratio</th>
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<tbody>
<tr>
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<td>256</td>
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<tr>
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<td>620.omnetpp_s</td>
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<tr>
<td>623.xalancbmk_s</td>
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<td>13.2</td>
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<td>13.0</td>
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<td>625.x264_s</td>
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<tr>
<td>648.exchange2_s</td>
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<td>18.8</td>
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<td>18.8</td>
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**SPECspeed®2017_int_base** = 11.8

**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"
- MALLOC_CONF = "retain:true"
- OMP_STACKSIZE = "192M"

---

## General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM memory using Redhat Enterprise Linux 8.0

Transparent Huge Pages enabled by default

Prior to runcpu invocation

Filesystem page cache synced and cleared with:

```bash
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)
# SPEC CPU®2017 Integer Speed Result

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

**General Notes (Continued)**

Sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases

**Platform Notes**

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

- **Sysinfo program /spec2017/bin/sysinfo**
  - Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
  - Running on localhost.localdomain Wed Apr 20 11:01:08 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 8352S CPU @ 2.20GHz
  - 2 "physical id"s (chips)
  - 64 "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 : 32
    - siblings : 32
    - 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 28 29 30 31
    - 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 28 29 30 31

- **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): 64
  - On-line CPU(s) list: 0-63
  - Thread(s) per core: 1
  - Core(s) per socket: 32
  - 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) Platinum 8352S CPU @ 2.20GHz
  - BIOS Model name: Intel(R) Xeon(R) Platinum 8352S CPU @ 2.20GHz
  - Stepping: 6

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

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</table>

**SPECspeed®2017_int_base = 11.8**  
**SPECspeed®2017_int_peak = Not Run**

**Platform Notes (Continued)**

```
CPU MHz: 1141.652
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: 49152K
NUMA node0 CPU(s): 0-31
NUMA node1 CPU(s): 32-63
Flags: fpu vme de pse tsc msr pae mce 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 bs rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor 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 f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault ebthumbs single ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vmmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erva invpcid cqm rdt_a姶 avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_1llc cqm_occup_1llc cqm_mbm_total cqm_mbm_local split_lock_detect wbinvd dtherm ida arat pin pts avx512vmbmi umip pkua ospke avx512_vbmi2 gfn_i vaes vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdrpid fsrm md_clear pconfig flush_l1d arch_capabilities
```

```
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 28 29 30 31
node 0 size: 257011 MB
node 0 free: 256016 MB
node 1 cpus: 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63
node 1 size: 258038 MB
node 1 free: 257612 MB
node distances:
node 0 1
0: 10 20
1: 20 10
```

**From /proc/meminfo**

```
MemTotal: 527411136 kB
 HugePages_Total: 0
```

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

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**Platform Notes (Continued)**

- **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): Not affected
  - CVE-2018-3620 (L1 Terminal Fault): Not affected
  - Microarchitectural Data Sampling: Not affected
  - CVE-2017-5754 (Meltdown): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
  - CVE-2018-3639 (Speculative Store Bypass): Not affected
  - 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 20 10:59**

- **SPEC is set to:** /spec2017  
  Filesystem Type Size Used Avail Use% Mounted on

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

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Platform Notes (Continued)
/dev/sda3      xfs  859G   68G  792G   8% /

From /sys/devices/virtual/dmi/id
Vendor: XFUSION
Product: 2288H V6
Product Family: Whitley
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:
  16x Samsung M393A4K40DB3-CWE 32 GB 2 rank 3200

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 2021.4.0 Build 20210924
Copyright (C) 1985-2021 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 2021.4.0 Build 20210924
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.
==============================================================================
Fortran | 648.exchange2_s(base)

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**SPECspeed®2017_int_base = 11.8**  
**SPECspeed®2017_int_peak = Not Run**

### Compiler Version Notes (Continued)

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

- 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 -fno-openmp -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

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# SPEC CPU®2017 Integer Speed Result

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**Base Optimization Flags (Continued)**

C++ benchmarks (continued):
- `-L/usr/local/intel/compiler/2021.4.0/linux/compiler/lib/intel64_lin/`
- `-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:

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.

Tested with SPEC CPU®2017 v1.1.8 on 2022-04-20 11:01:07-0400.  
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