**SPEC CPU®2017 Integer Speed Result**

**Huawei**  
(Test Sponsor: China Academy of Information and Communications Technology)

**Huawei 2288H V6 (Intel Xeon Platinum 8380)**

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### Threads

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<tr>
<td>Threads</td>
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<tr>
<td>---------</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>11.0</td>
</tr>
<tr>
<td>13.0</td>
</tr>
<tr>
<td>15.0</td>
</tr>
<tr>
<td>17.0</td>
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<tr>
<td>19.0</td>
</tr>
<tr>
<td>21.0</td>
</tr>
<tr>
<td>23.0</td>
</tr>
<tr>
<td>25.0</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon Platinum 8380
- **Max MHz:** 3400
- **Nominal:** 2300
- **Enabled:** 80 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:** 60 MB I+D on chip per chip
- **Other:** None
- **Memory:** 1 TB (32 x 32 GB 2Rx4 PC4-3200AA-R)
- **Storage:** 1 x 960 GB SSD
- **Other:** None
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage.

### Software

- **OS:** SUSE Linux Enterprise Server 15 SP2(x86_64)  
  Kernel 5.3.18-22-default
- **Compiler:**  
  C/C++: Version 2021.2.0 of Intel oneAPI  
  DPC++/C++ Compiler  
  Build 20210317 for Linux;  
  Fortran: Version 2021.2.0 of Intel Fortran  
  Compiler Classic Build 20210228 for Linux;
- **Parallel:** Yes
- **Firmware:** Version 0.66 released Apr-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
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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>
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</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>80</td>
<td>255</td>
<td>6.95</td>
<td>254</td>
<td>7.00</td>
<td>255</td>
<td>6.96</td>
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<tr>
<td>602.gcc_s</td>
<td>80</td>
<td>356</td>
<td>11.2</td>
<td>355</td>
<td>11.2</td>
<td>360</td>
<td>11.1</td>
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<tr>
<td>605.mcf_s</td>
<td>80</td>
<td>233</td>
<td>20.2</td>
<td>233</td>
<td>20.3</td>
<td>233</td>
<td>20.3</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>80</td>
<td>134</td>
<td>12.2</td>
<td>134</td>
<td>12.2</td>
<td>132</td>
<td>12.3</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>80</td>
<td>110</td>
<td>12.9</td>
<td>110</td>
<td>12.9</td>
<td>110</td>
<td>12.9</td>
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<tr>
<td>625.x264_s</td>
<td>80</td>
<td>102</td>
<td>17.3</td>
<td>102</td>
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<td>102</td>
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<td>631.deepsjeng_s</td>
<td>80</td>
<td>250</td>
<td>5.73</td>
<td>250</td>
<td>5.73</td>
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<td>641.leela_s</td>
<td>80</td>
<td>367</td>
<td>4.65</td>
<td>366</td>
<td>4.66</td>
<td>368</td>
<td>4.64</td>
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<tr>
<td>648.exchange2_s</td>
<td>80</td>
<td>154</td>
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<td>155</td>
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<tr>
<td>657.xz_s</td>
<td>80</td>
<td>257</td>
<td>24.1</td>
<td>255</td>
<td>24.2</td>
<td>255</td>
<td>24.2</td>
</tr>
</tbody>
</table>

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"
SCALING_GOVERNOR set to ondemand

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = 
"/opt/intel/oneapi/compiler/2021.2.0/linux/compiler/lib/intel64:/usr/local/jemalloc64-5.0.1"
MALLOCONF = "retain:true"
OMP_STACKSIZE = "192M"

General Notes

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

(Continued on next page)
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Huawei 2288H V6 (Intel Xeon Platinum 8380)

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

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Software Availability: Mar-2021

General Notes (Continued)
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes

BIOS configuration:
Power Policy Set to Load Balance
Hyper-Threading Set to Disable
XPT Prefetch Set to Enabled

Sysinfo program /home/spec2017115/bin/sysinfo
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c
running on localhost Mon Apr 26 17:17:55 2021

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 8380 CPU @ 2.30GHz
  2 "physical id"s (chips)
  80 "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 : 40
siblings : 40
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 32 33 34 35 36 37 38 39
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 32 33 34 35 36 37 38 39

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
Address sizes: 46 bits physical, 57 bits virtual
CPU(s): 80
On-line CPU(s) list: 0-79
Thread(s) per core: 1
Core(s) per socket: 40
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Platinum 8380 CPU @ 2.30GHz

(Continued on next page)
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#### SPECspeed®2017_int_base = 11.8

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---

**Platform Notes (Continued)**

- **Stepping:** 6
- **CPU MHz:** 801.159
- **CPU max MHz:** 2301.0000
- **CPU min MHz:** 800.0000
- **BogoMIPS:** 4600.00
- **Virtualization:** VT-x
- **L1d cache:** 48K
- **L1i cache:** 32K
- **L2 cache:** 1280K
- **L3 cache:** 61440K
- NUMA node0 CPU(s): 0-39
- NUMA node1 CPU(s): 40-79

**Flags:**

fpu vmx 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
aperfmperf pni pclmulqdq dtes64monitor 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 epb cat_13 invpcid_single ssbd
mqa ibrs ibpb stibp ibrs_enhanced tpr_shadow vmptrld flexpriority vpid ept_ad
fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm rdt_a avx512f
avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni
avx512bw avx512vl xsaveopt xsaveprec svsetcf xsavec xsaveopt cqm_llc cqm_occup_llc cqm_mbmvtotal
cqm_mbb_local wbinvd dtherm ida arat pln pts avx512vbmi umip pku ospke
avx512_vmbmi2 gfnl vaes vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq
la57 rdpid md_clear pconf lgia flush_lld arch_capabilities

---

**/proc/cpuinfo**

```
cache data
    cache size : 61440 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
          28 29 30 31 32 33 34 35 36 37 38 39

node 0 size: 515406 MB
node 0 free: 512052 MB

node 1 cpus: 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64
          65 66 67 68 69 70 71 72 73 74 75 76 77 78 79

node 1 size: 515805 MB
node 1 free: 512657 MB

node distances:
node 0 1
  0: 10 20
  1: 20 10
```

---

From `/proc/meminfo`

```
MemTotal: 1055960792 KB
```

(Continued on next page)
Huawei

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Platform Notes (Continued)

HugePages_Total:       0
Hugepagesize:       2048 kB

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has ondemand

From /etc/*release*/etc/*version*
    os-release:
        NAME="SLES"
        VERSION="15-SP2"
        VERSION_ID="15.2"
        PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
        ID="sles"
        ID_LIKE="suse"
        ANSI_COLOR="0;32"
        CPE_NAME="cpe:/o:suse:sles:15:sp2"

uname -a:
    Linux localhost 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020 (720aeba) 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 26 08:40 last=5

SPEC is set to: /home/spec2017115

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda3      xfs   548G   80G  468G  15% /

From /sys/devices/virtual/dmi/id
    Vendor: Huawei
    Product: 2288H V6

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Platform Notes (Continued)

Product Family: Whitley
Serial: Huawei

Additional information from dmidecode 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:
32x Samsung M393A4K40DB3-CWE 32 GB 2 rank 3200

BIOS:
BIOS Vendor: INSYDE Corp.
BIOS Version: 0.66
BIOS Date: 04/09/2021
BIOS Revision: 0.66

(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 2021.2.0 Build 20210317
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 2021.2.0 Build 20210317
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.
==============================================================================

Fortran

| 648.exchange2_s(base) |

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.2.0 Build 20210228_000000
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.
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**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 -\W1,-z,muldefs -xCORE-AVX2
- -O3 -ffast-math -flto -mfpmath=sse -funroll-loops
- -qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
- -L/usr/local/jemalloc64-5.0.1/ -ljemalloc

C++ benchmarks:
- -DSPEC\_OPENMP -m64 -\W1,-z,muldefs -xCORE-AVX2 -O3 -ffast-math -flto
- -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
- -mbranches-within-32B-boundaries
- -L/opt/intel/oneapi/compiler/2021.2.0/linux/compiler/lib/intel64\_lin
- -lqkmalloc

Fortran benchmarks:
- -m64 -xCORE-AVX2 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4
- -nostandard-realloc-lhs -align array32byte -auto
- -mbranches-within-32B-boundaries
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The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2017/flags/CAICT-Platform-Settings-V1.3.html

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

http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revC.xml
http://www.spec.org/cpu2017/flags/CAICT-Platform-Settings-V1.3.xml

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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 v1.1.5 on 2021-04-26 17:17:55-0400.
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