## SPEC CPU®2017 Integer Rate Result

Huawei TaiShan 200 Server (Model 2480)  
(2.6 GHz, Huawei Kunpeng 920 7260)

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECrate®2017_int_base</th>
<th>SPECrate®2017_int_peak</th>
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<tbody>
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<td>500.perlbench_r</td>
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<td>502.gcc_r</td>
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</tr>
<tr>
<td>557.xz_r</td>
<td>256</td>
<td>412</td>
</tr>
</tbody>
</table>

### Hardware

**CPU Name:** Huawei Kunpeng 920 7260  
**Max MHz:** 2600  
**Nominal:** 2600  
**Enabled:** 256 cores, 4 chips  
**Orderable:** 1, 2, 3, 4 chips  
**Cache L1:** 64 KB I+ 64 KB D on chip per core  
**Cache L2:** 512 KB I+D on chip per core  
**Cache L3:** 64 MB I+D on chip per chip  
**Other:** None  
**Memory:** 1 TB (32 x 32 GB 2Rx4 PC4-2933Y-R)  
**Storage:** 1 x 960 GB SAS SSD  
**Other:** None

### Software

**OS:** kylin release 10 (Azalea)  
**Version:** 4.19.90-5.ky10.aarch64  
**Compiler:** C/C++/Fortran: Version 9.1.0 of GCC, the GNU Compiler Collection

**Firmware:** Huawei Corp. Version 1.20 released Apr-2020  
**File System:** xfs  
**System State:** Run level 5 (multi-user graphical)  
**Base Pointers:** 64-bit  
**Peak Pointers:** Not Applicable  
**Other:** jemalloc memory allocator V5.2.1  
**Power Management:** BIOS set to prefer performance at the cost of additional power usage
## SPEC CPU®2017 Integer Rate Result

### Huawei

(1) CPU2017 License: 5036  
(2) Test Sponsor: Peng Cheng Laboratory  
(3) Tested by: Peng Cheng Laboratory

**Test Sponsor:** Peng Cheng Laboratory  
**Hardware Availability:** Jan-2020  
**Software Availability:** Jul-2020

---

### Results Table

<table>
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</table>

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### SPECrate®2017_int_base = 628  
### 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 taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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 = 
"/usr/local/gcc-9.1.0/lib64/:/usr/local/gcc-9.1.0/lib/:/lib64::/home/jemalloc-5.2.1-setup/lib"
```

### 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
```
jemalloc: configured and built at default for 64bit targets;  
jemalloc: built with the kylin V10, and the system compiler gcc 7.3.0;  

(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.
NA: 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
Custom Refresh Rate Set to 64ms
CPU Prefetcher Set to Enabled
L3 Cache Model Set to in :private out:private

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbble6e46a485a0011
running on localhost.localdomain Fri May 29 09:13:26 2020

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
* 
* Did not identify cpu model. If you would
* like to write your own sysinfo program, see
* www.spec.org/cpu2017/config.html#sysinfo
* 
*
* 0 "physical id" tags found. Perhaps this is an older system,
* or a virtualized system. Not attempting to guess how to
* count chips/cores for this system.
* 
   256 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

From ls_cpu:
Architecture:          aarch64
CPU op-mode(s):        64-bit
Byte Order:            Little Endian
CPU(s):                256
On-line CPU(s) list:   0-255
Thread(s) per core:    1
Core(s) per socket:    64

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

Huawei
(Test Sponsor: Peng Cheng Laboratory)
Huawei TaiShan 200 Server (Model 2480)
(2.6 GHz,Huawei Kunpeng 920 7260)

SPECrare®2017_int_base =  628
SPECrare®2017_int_peak = Not Run

CPU2017 License: 5036
Test Sponsor: Peng Cheng Laboratory
Test Date: May-2020
Tested by: Peng Cheng Laboratory
Hardware Availability: Jan-2020
Software Availability: Jul-2020

Platform Notes (Continued)

Socket(s): 4
NUMA node(s): 8
Vendor ID: HiSilicon
Model: 0
Model name: Kunpeng-920
Stepping: 0x1
BogoMIPS: 200.00
L1d cache: 16 MiB
L1i cache: 16 MiB
L2 cache: 128 MiB
L3 cache: 512 MiB
NUMA node0 CPU(s): 0-31
NUMA node1 CPU(s): 32-63
NUMA node2 CPU(s): 64-95
NUMA node3 CPU(s): 96-127
NUMA node4 CPU(s): 128-159
NUMA node5 CPU(s): 160-191
NUMA node6 CPU(s): 192-223
NUMA node7 CPU(s): 224-255
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl
Vulnerability Spectre v1: Mitigation; __user pointer sanitization
Vulnerability Spectre v2: Not affected
Vulnerability Tsx async abort: Not affected
Flags: fp asimd evtstrm aes pml1 shal sha2 crc32 atomics
        fphp asimdhp cpuid asimdrdm jscvt fcma dcpop asimdpp asimdfhm ssbs

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.

From /proc/meminfo
MemTotal: 1071619840 kB
HugePages_Total: 100000
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
kylin-release: kylin release 10 (Azalea)
oS-release:
    NAME="kylin"
    VERSION="10 (Azalea)"
    ID="kylin"
    VERSION_ID="10"
    PRETTY_NAME="kylin 10 (Azalea)"

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

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Huawei
(Test Sponsor: Peng Cheng Laboratory)
Huawei TaiShan 200 Server (Model 2480)
(2.6 GHz, Huawei Kunpeng 920 7260)

SPECratenot_run
SPECratenot_run

CPU2017 License: 5036
Test Sponsor: Peng Cheng Laboratory
Tested by: Peng Cheng Laboratory

SPECratenot_run
SPECratenot_run

Platform Notes (Continued)

ANSI_COLOR="0;31"

system-release: kylin release 10 (Azalea)

uname -a:
Linux localhost.localdomain 4.19.90-5.ky10.aarch64 #1 SMP Wed Apr 8 09:34:13 CST 2020
aarch64 aarch64 aarch64 GNU/Linux

Kernel self-reported vulnerability status:

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
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Not affected
tsx_async_abort: Not affected

run-level 5 May 29 09:08

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/klas00-home xfs 838G 16G 822G 2% /home

From /sys/devices/virtual/dmi/id
BIOS: Huawei Corp. 1.20 04/14/2020
Vendor: Huawei
Product: TaiShan 200 (Model 2480)
Serial: 2102312UXX10KC000007

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 Hynix HMA84GR7CJR4N-WM 32 GB 2 rank 2933

(End of data from sysinfo program)
The sysinfo is missing the cpu name, the processor under test is Huawei Kunpeng 920 7260.
The L3 capacity is 64MB per processor for Huawei Kunpeng 920 7260 processor for a SUT
total of 256 MiB.
Huawei TaiShan 200 Server (Model 2480) (2.6 GHz,Huawei Kunpeng 920 7260)

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**CPU2017 License:** 5036  
**Test Sponsor:** Peng Cheng Laboratory  
**Tested by:** Peng Cheng Laboratory  
**Test Date:** May-2020  
**Hardware Availability:** Jan-2020  
**Software Availability:** Jul-2020

### Compiler Version Notes

```plaintext
==============================================================================
C       | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)  
| 525.x264_r(base) 557.xz_r(base)
------------------------------------------------------------------------------
Using built-in specs.  
COLLECT_GCC=/usr/local/gcc-9.1.0/bin/gcc  
COLLECT_LTO_WRAPPER=/usr/local/gcc-9.1.0/libexec/gcc/aarch64-unknown-linux-gnu/9.1.0/lto-wrapper  
Target: aarch64-unknown-linux-gnu  
Configured with: ../configure --enable-checking=release  
--enable-languages=c,c++,fortran --disable-multilib  
--prefix=/usr/local/gcc-9.1.0  
Thread model: posix  
gcc version 9.1.0 (GCC)
==============================================================================

```

```plaintext
C++     | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)  
| 541.leela_r(base)
------------------------------------------------------------------------------
Using built-in specs.  
COLLECT_GCC=/usr/local/gcc-9.1.0/bin/g++  
COLLECT_LTO_WRAPPER=/usr/local/gcc-9.1.0/libexec/gcc/aarch64-unknown-linux-gnu/9.1.0/lto-wrapper  
Target: aarch64-unknown-linux-gnu  
Configured with: ../configure --enable-checking=release  
--enable-languages=c,c++,fortran --disable-multilib  
--prefix=/usr/local/gcc-9.1.0  
Thread model: posix  
gcc version 9.1.0 (GCC)
==============================================================================

```

```plaintext
Fortran | 548.exchange2_r(base)
------------------------------------------------------------------------------
Using built-in specs.  
COLLECT_GCC=/usr/local/gcc-9.1.0/bin/gfortran  
COLLECT_LTO_WRAPPER=/usr/local/gcc-9.1.0/libexec/gcc/aarch64-unknown-linux-gnu/9.1.0/lto-wrapper  
Target: aarch64-unknown-linux-gnu  
Configured with: ../configure --enable-checking=release  
--enable-languages=c,c++,fortran --disable-multilib  
--prefix=/usr/local/gcc-9.1.0  
Thread model: posix  
gcc version 9.1.0 (GCC)
==============================================================================
```
### Base Compiler Invocation

C benchmarks:
- `gcc`

C++ benchmarks:
- `g++`

Fortran benchmarks:
- `gfortran`

### Base Portability Flags

<table>
<thead>
<tr>
<th>C benchmark</th>
<th>Flags</th>
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<tbody>
<tr>
<td>perlbench_r</td>
<td><code>-DSPEC_LINUX_AARCH64 -DSPEC_LP64</code></td>
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<tr>
<td>gcc_r</td>
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<td>mcf_r</td>
<td><code>-DSPEC_LP64</code></td>
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<td><code>-DSPEC_LP64</code></td>
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<tr>
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<td><code>-DSPEC_LINUX -DSPEC_LP64</code></td>
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<tr>
<td>x264_r</td>
<td><code>-DSPEC_LP64</code></td>
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<tr>
<td>deepsjeng_r</td>
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</tr>
<tr>
<td>xz_r</td>
<td><code>-DSPEC_LP64</code></td>
</tr>
</tbody>
</table>

### Base Optimization Flags

C benchmarks:
- `-mabi=lp64 -std=c99 -z muldefs -O3 -march=armv8.2-a+lse -fno-PIE`
- `-no-pie -fomit-frame-pointer -funroll-loops -fno-strict-aliasing`
- `-fgnu89-inline -L/home/jemalloc-5.2.1-setup/lib -ljemalloc`

C++ benchmarks:
- `-mabi=lp64 -std=c++03 -O3 -march=armv8.2-a+lse -fno-PIE -no-pie`
- `-fomit-frame-pointer -funroll-loops -L/home/jemalloc-5.2.1-setup/lib -ljemalloc`

Fortran benchmarks:
- `-mabi=lp64 -O3 -march=armv8.2-a+lse -fno-PIE -no-pie`
- `-fomit-frame-pointer -funroll-loops -L/home/jemalloc-5.2.1-setup/lib -ljemalloc`

---

### Huawei TaiShan 200 Server (Model 2480)

- **CPU2017 License:** 5036
- **Hardware Availability:** Jan-2020
- **Software Availability:** Jul-2020
- **Test Sponsor:** Peng Cheng Laboratory
- **Tested by:** Peng Cheng Laboratory
- **Test Date:** May-2020

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**Huawei**

(Test Sponsor: Peng Cheng Laboratory)

(2.6 GHz, Huawei Kunpeng 920 7260)
Huawei
(Test Sponsor: Peng Cheng Laboratory)
Huawei TaiShan 200 Server (Model 2480)
(2.6 GHz,Huawei Kunpeng 920 7260)

SPECrater<sup>®</sup>2017<sub>int</sub>_base = 628
SPECrater<sup>®</sup>2017<sub>int</sub>_peak = Not Run

CPU2017 License: 5036
Test Sponsor: Peng Cheng Laboratory
Tested by: Peng Cheng Laboratory

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:
http://www.spec.org/cpu2017/flags/PCL-Platform-Settings-Kunpeng-V1.0-revF.xml

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Tested with SPEC CPU<sup>®</sup>2017 v1.1.0 on 2020-05-28 21:13:25-0400.
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