



SPEC CPU®2017 Integer Rate Result

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Huawei

(Test Sponsor: Peng Cheng Laboratory)
Huawei TaiShan 200 Server (Model 2280)
(2.6 GHz, Huawei Kunpeng 920 7260)

SPECrate®2017_int_base = 318

SPECrate®2017_int_peak = Not Run

CPU2017 License: 5036

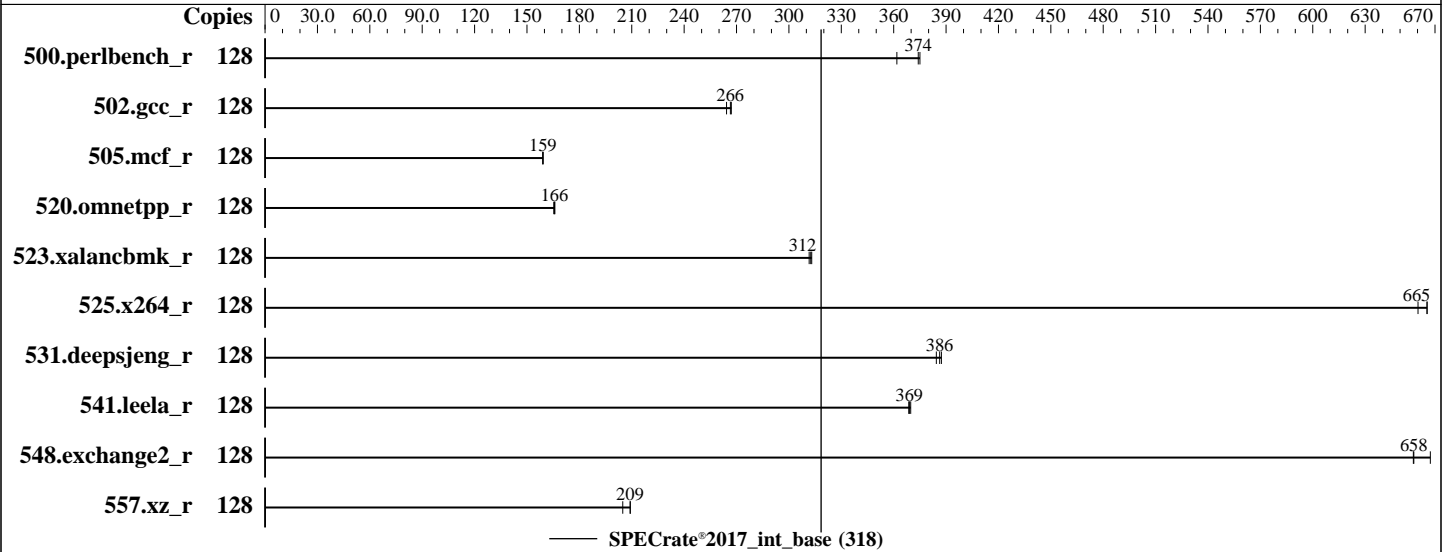
Test Sponsor: Peng Cheng Laboratory

Tested by: Peng Cheng Laboratory

Test Date: May-2020

Hardware Availability: Jun-2019

Software Availability: Jul-2020



Hardware

CPU Name: Huawei Kunpeng 920 7260
 Max MHz: 2600
 Nominal: 2600
 Enabled: 128 cores, 2 chips
 Orderable: 1,2 chips
 Cache L1: 64 KB I + 64 KB D on chip per core
 L2: 512 KB I+D on chip per core
 L3: 64 MB I+D on chip per chip
 Other: None
 Memory: 512 GB (16 x 32 GB 2Rx4 PC4-2933Y-R)
 Storage: 1 x 1.92 TB SAS SSD
 Other: None

Software

OS: kylin release 10 (Azalea)
 4.19.90-5.ky10.aarch64
 Compiler: C/C++/Fortran: Version 9.1.0 of GCC, the GNU Compiler Collection
 Parallel: No
 Firmware: Huawei Corp. Version 1.16 released Feb-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



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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	128	545	374	543	375	563	362							
502.gcc_r	128	680	266	679	267	686	264							
505.mcf_r	128	1301	159	1300	159	1299	159							
520.omnetpp_r	128	1016	165	1013	166	1012	166							
523.xalancbmk_r	128	434	312	432	313	433	312							
525.x264_r	128	337	665	337	665	339	660							
531.deepsjeng_r	128	380	386	382	384	379	387							
541.leela_r	128	573	370	575	369	574	369							
548.exchange2_r	128	510	658	510	658	503	667							
557.xz_r	128	661	209	675	205	661	209							

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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;

jemalloc: sources available via jemalloc.net or <https://github.com/jemalloc/jemalloc/releases>

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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

Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011

running on localhost.localdomain Fri May 29 09:14:06 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.

*

128 "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 lscpu:

```
Architecture:          aarch64
CPU op-mode(s):        64-bit
Byte Order:             Little Endian
CPU(s):                 128
On-line CPU(s) list:   0-127
Thread(s) per core:    1
Core(s) per socket:    64
Socket(s):              2
```

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Platform Notes (Continued)

```

NUMA node(s): 4
Vendor ID: HiSilicon
Model: 0
Model name: Kunpeng-920
Stepping: 0x1
BogoMIPS: 200.00
L1d cache: 8 MiB
L1i cache: 8 MiB
L2 cache: 64 MiB
L3 cache: 256 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
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 pmull sha1 sha2 crc32 atomics fphp asimdhp cpuid asimdrdm jscvt fcma dcpop asimddp asimdfhm ssbs

```

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

```

From /proc/meminfo
MemTotal: 535431808 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)"
ANSI_COLOR="0;31"

```

```

system-release: kylin release 10 (Azalea)
system-release-cpe: cpe:/o:kylin:kylin:10:ga:server

```

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Platform Notes (Continued)

```
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 09:06
```

```
SPEC is set to: /home/cpu2017
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/mapper/klas00-home xfs   1.5T   32G  1.4T   3% /home
```

```
From /sys/devices/virtual/dmi/id
BIOS:      Huawei Corp. 1.16 02/28/2020
Vendor:    Huawei
Product:   TaiShan 200 (Model 2280)
Serial:    2102312PRNN0KC001136
```

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:
16x NO DIMM NO DIMM
16x Samsung M393A4K40CB2-CVF 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 128 MiB.

Compiler Version Notes

```
=====
C      | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)
      | 525.x264_r(base) 557.xz_r(base)
```

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Compiler Version Notes (Continued)

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)
-----
```

```
=====  
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)
-----
```

```
=====  
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

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Base Compiler Invocation (Continued)

C++ benchmarks:

g++

Fortran benchmarks:

gfortran

Base Portability Flags

```
500.perlbench_r: -DSPEC_LINUX_AARCH64 -DSPEC_LP64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LINUX -DSPEC_LP64
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
```

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
```

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2017/flags/gcc.2020-06-30.html>

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



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

<http://www.spec.org/cpu2017/flags/gcc.2020-06-30.xml>

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

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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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