### SPEC CPU®2017 Floating Point Speed Result

**Huawei CH121 V5 (Intel Xeon Gold 6246R)**

**SPECspeed®2017_fp_base** = 147

**SPECspeed®2017_fp_peak** = Not Run

### Hardware

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>Jan-2021</th>
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<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Jul-2020</td>
</tr>
<tr>
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<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed®2017_fp_base (147)</th>
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<tbody>
<tr>
<td>603.bwaves_s 32</td>
<td>163</td>
</tr>
<tr>
<td>607.cactuBSSN_s 32</td>
<td>104</td>
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<tr>
<td>619.lbm_s 32</td>
<td>139</td>
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<tr>
<td>621.wrf_s 32</td>
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<tr>
<td>627.cam4_s 32</td>
<td>70.9</td>
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<tr>
<td>628.pop2_s 32</td>
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</tr>
<tr>
<td>638.imagick_s 32</td>
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<tr>
<td>644.nab_s 32</td>
<td>92.9</td>
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<tr>
<td>649.fotonik3d_s 32</td>
<td>184</td>
</tr>
<tr>
<td>654.roms_s 32</td>
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</tr>
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</table>

#### CPU2017 License:

- 6177

#### Test Sponsor:

- China Academy of Information and Communications Technology

#### Tested by:

- China Academy of Information and Communications Technology

#### CPU Name:

- Intel Xeon Gold 6246R

#### Max MHz:

- 4100

#### Nominal:

- 3400

#### Enabled:

- 32 cores, 2 chips

#### Orderable:

- 1.2 chips

#### Cache L1:

- 32 KB I + 32 KB D on chip per core

#### Cache L2:

- 1 MB I+D on chip per core

#### Cache 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 SSD

#### Other:

- None

### Software

#### OS:

- SUSE Linux Enterprise Server 12 SP4 (x86_64)
- Kernel 4.12.14-94.41-default

#### Compiler:

- C/C++: Version 19.1.1.217 of Intel C/C++ Compiler for Linux;
- Fortran: Version 19.1.1.217 of Intel Fortran Compiler for Linux

#### Parallel:

- Yes

#### Firmware:

- Version 6.83 released Jun-2019

#### 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

#### Power Management:

- BIOS set to prefer performance at the cost of additional power usage.
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Huawei
(Test Sponsor: China Academy of Information and Communications Technology)

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Results Table

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SPECspeed®2017_fp_base = 147
SPECspeed®2017_fp_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 = "/opt/intel/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64:/usr/local/jemalloc64-5.0.1"
MALLOCONF = "retain: true"
OMP_STACKSIZE = "192M"

General Notes

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.
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, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

(Continued on next page)
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CPU2017 License: 6177
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Tested by: China Academy of Information and Communications Technology
Test Date: Jan-2021
Hardware Availability: Jul-2020
Software Availability: Apr-2020

General Notes (Continued)


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

Sysinfo program /spec2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7ed1be6e46a485a0011
running on linux-j3dr Mon Jan 18 18:51:20 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) Gold 6246R CPU @ 3.40GHz
    2 "physical id"s (chips)
    32 "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 : 16
    siblings  : 16
    physical 0: cores 0 2 3 5 6 9 10 12 13 16 18 20 21 24 27 29
    physical 1: cores 0 2 3 5 6 9 10 12 13 16 18 20 21 24 27 29

From lscpu:

    Architecture:          x86_64
    CPU op-mode(s):        32-bit, 64-bit
    Byte Order:            Little Endian
    CPU(s):                32
    On-line CPU(s) list:   0-31
    Thread(s) per core:    1
    Core(s) per socket:    16
    Socket(s):             2
    NUMA node(s):          2
    Vendor ID:             GenuineIntel
    CPU family:            6
    Model:                 85
    Model name:            Intel(R) Xeon(R) Gold 6246R CPU @ 3.40GHz
    Stepping:              7
    CPU MHz:               3400.000
    CPU max MHz:           4100.0000
    CPU min MHz:           1200.0000

(Continued on next page)
Huawei CH121 V5 (Intel Xeon Gold 6246R)

CPU2017 License: 6177  
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Software Availability: Apr-2020

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Platform Notes (Continued)

BogoMIPS: 6800.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 36608K
NUMA node0 CPU(s): 0-15
NUMA node1 CPU(s): 16-31

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 pdpe1gb rdtscp
lm constant_tsc art arch_perfmon pebs bts rep_good noapic xtopology

/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: 2 nodes (0-1)
  node 0 cpus:  0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
  node 0 size:  385580 MB
  node 0 free:  385130 MB
  node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
  node 1 size:  387036 MB
  node 1 free:  385743 MB
  node distances:
    node 0 1
    0:  10 21
    1:  21 10

From /proc/meminfo
  MemTotal:  791159924 KB
  HugePages_Total:  0
  Hugepagesize:  2048 KB

From /etc/*release* /etc/*version*
  SUSE-release:  SUSE Linux Enterprise Server 12 (x86_64)
    VERSION = 12
    PATCHLEVEL = 4

(Continued on next page)
Huawei CH121 V5 (Intel Xeon Gold 6246R) SPECspeed®2017_fp_base = 147

SPECspeed®2017_fp_peak = Not Run

Platform Notes (Continued)

# This file is deprecated and will be removed in a future service pack or release.
# Please check /etc/os-release for details about this release.

```
os-release:
   NAME="SLES"
   VERSION="12-SP4"
   VERSION_ID="12.4"
   PRETTY_NAME="SUSE Linux Enterprise Server 12 SP4"
   ID="sles"
   ANSI_COLOR="0;32"
   CPE_NAME="cpe:/o:suse:sles:12:sp4"

uname -a:
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: No status reported
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: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted Speculation, IBPB, IBRS_FW

run-level 3 Jan 18 16:11
SPEC is set to: /spec2017

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda3      xfs   734G   48G  687G   7% /

From /sys/devices/virtual/dmi/id
BIOS:    INSYDE Corp. 6.83 06/29/2019
Vendor:  Huawei
Product: CH121 V5
Product Family: Purley
Serial:  Serial Number

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:
   24x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

(End of data from sysinfo program)
**Huawei**  
(Test Sponsor: China Academy of Information and Communications Technology)

**Huawei CH121 V5 (Intel Xeon Gold 6246R)**

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### Compiler Version Notes

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### Base Compiler Invocation

C benchmarks:  
`icc`

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(Test Sponsor: China Academy of Information and Communications Technology)
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Base Compiler Invocation (Continued)

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Base Portability Flags

603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG
628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
-assume byterecl
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-m64 -std=c11 -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-mbranches-within-32B-boundaries

Fortran benchmarks:
-m64 --Wl, -z, muldefs -DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-nostandard-realloc-lhs -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/ -ljemalloc

Benchmarks using both Fortran and C:
-m64 --std=c11 --Wl, -z, muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/ -ljemalloc

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Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundsaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/ -ljemalloc

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-ic19.1u1-official-linux64_revB.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 v1.1.0 on 2021-01-18 05:51:20-0500.
Originally published on 2021-03-16.