## SPEC® CPU2017 Integer Rate Result

### Huawei

**Huawei CH121 V5 (Intel Xeon Gold 5215M)**

<table>
<thead>
<tr>
<th>SPECrate2017_int_base</th>
<th>119</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 3175  
**Test Sponsor:** Huawei  
**Tested by:** Huawei  
**Test Date:** Apr-2019  
**Hardware Availability:** Apr-2019  
**Software Availability:** Dec-2018

| Software | OS: SUSE Linux Enterprise Server 12 SP4 (x86_64)  
|----------|-------------------------------------------------|
|          | Compiler: C++: Version 19.0.1.144 of Intel C/C++ Compiler Build 20181018 for Linux; Fortran: Version 19.0.1.144 of Intel Fortran Compiler Build 20181018 for Linux  
|          | Parallel: No  
|          | Firmware: Version 6.52 Released Mar-2019  
|          | File System: xfs  
|          | System State: Run level 3 (multi-user)  
|          | Base Pointers: 64-bit  
|          | Peak Pointers: Not Applicable  
|          | Other: None |

| Hardware | CPU Name: Intel Xeon Gold 5215M  
|----------|----------------------------------|
|          | Max MHz.: 3400  
|          | Nominal: 2500  
|          | Enabled: 20 cores, 2 chips, 2 threads/core  
|          | Orderable: 1,2 chips  
|          | Cache L1: 32 KB I + 32 KB D on chip per core  
|          | L2: 1 MB I+D on chip per core  
|          | L3: 13.75 MB I+D on chip per chip  
|          | Other: None  
|          | Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R, running at 2666)  
|          | Storage: 1 x 1200 GB SAS, 10000 RPM  
|          | Other: None |

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<thead>
<tr>
<th>Copies</th>
<th>SPECrate2017_int_base (119)</th>
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<tr>
<td>500.perlbench_r</td>
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<tr>
<td>502.gcc_r</td>
<td>40</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>40</td>
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<tr>
<td>520.omnetpp_r</td>
<td>40</td>
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<tr>
<td>523.xalancbmk_r</td>
<td>40</td>
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<tr>
<td>525.x264_r</td>
<td>40</td>
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<tr>
<td>531.deepsjeng_r</td>
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<tr>
<td>541.leela_r</td>
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<tr>
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<tr>
<td>557.xz_r</td>
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**Copies:**
- 500.perlbench_r: 40
- 502.gcc_r: 40
- 505.mcf_r: 40
- 520.omnetpp_r: 40
- 523.xalancbmk_r: 40
- 525.x264_r: 40
- 531.deepsjeng_r: 40
- 541.leela_r: 40
- 548.exchange2_r: 40
- 557.xz_r: 40

---

**Notes:**
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- Hardware Availability: Apr-2019
- Software Availability: Dec-2018
- Test Date: Apr-2019
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---

**Performance Results:**

- SPECrate2017_int_base = 119
- SPECrate2017_int_peak = Not Run

---

**Software Environment:**

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- Compiler: C/C++: Version 19.0.1.144 of Intel C/C++ Compiler Build 20181018 for Linux; Fortran: Version 19.0.1.144 of Intel Fortran Compiler Build 20181018 for Linux  
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Huawei

Huawei CH121 V5 (Intel Xeon Gold 5215M)

**CPU2017 License:** 3175  
**Test Sponsor:** Huawei  
**Tested by:** Huawei

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
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<td>546</td>
<td>79.1</td>
</tr>
</tbody>
</table>

**SPECrate2017_int_base = 119**  
**SPECrate2017_int_peak = Not Run**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

### Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl 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"

### General Notes

Environment variables set by runcpu before the start of the run:  
LD_LIBRARY_PATH = "/spec/lib/ia32:/spec/lib/intel64:/spec/je5.0.1-32:/spec/je5.0.1-64"

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM  
memory using Redhat Enterprise Linux 7.5  
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  
runcpu command invoked through numactl i.e.:  
umactl --interleave=all runcpu <etc>

Yes: 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)
General Notes (Continued)

is mitigated in the system as tested and documented.

Platform Notes

BIOS configuration:
Power Policy Set to Performance
XPT Prefetch Set to Enabled
Sysinfo program /spec/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on sles12sp4 Fri Apr 12 21:14:24 2019

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 5215M CPU @ 2.50GHz
  2 "physical id"s (chips)
  40 "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 : 10
    siblings : 20
    physical 0: cores 0 1 2 3 4 8 9 10 11 12
    physical 1: cores 0 1 2 3 4 8 9 10 11 12

From lscpu:
  Architecture: x86_64
  CPU op-mode(s): 32-bit, 64-bit
  Byte Order: Little Endian
  CPU(s): 40
  On-line CPU(s) list: 0-39
  Thread(s) per core: 2
  Core(s) per socket: 10
  Socket(s): 2
  NUMA node(s): 2
  Vendor ID: GenuineIntel
  CPU family: 6
  Model: 85
  Model name: Intel(R) Xeon(R) Gold 5215M CPU @ 2.50GHz
  Stepping: 6
  CPU MHz: 2500.000
  CPU max MHz: 3400.0000
  CPU min MHz: 1000.0000
  BogoMIPS: 5000.00
  Virtualization: VT-x

(Continued on next page)


Huawei CH121 V5 (Intel Xeon Gold 5215M)

| SPECrate2017_int_base = 119 |
| SPECrate2017_int_peak = Not Run |

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**Test Date:** Apr-2019  
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**Software Availability:** Dec-2018

**Platform Notes (Continued)**

```
L1d cache: 32K  
L1i cache: 32K  
L2 cache: 1024K  
L3 cache: 14080K  
NUMA node0 CPU(s): 0-9,20-29  
NUMA node1 CPU(s): 10-19,30-39  
Flags: fpu vme de pse tsc msr pae 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 dtes64 ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pclmulqdq dtes64_2 cx8pd movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3nowprefetch cpuid_fault epb cat_l3 cdp_l3 invpcid_single ssbd mba ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 aemcs invpcid rdtscl rdарь_popcnt rdwrts extensionե rm pfenc rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 xsavees cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local dtherm ida arat pln pts pku ospke avx512_vnni flush_l1d arch_capabilities
```

`/proc/cpuinfo` cache data  
```
cache size : 14080 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 20 21 22 23 24 25 26 27 28 29  
node 0 size: 191904 MB  
node 0 free: 168097 MB  
node 1 cpus: 10 11 12 13 14 15 16 17 18 19 30 31 32 33 34 35 36 37 38 39  
node 1 size: 193278 MB  
node 1 free: 177513 MB  
node distances:  
node 0  1  
0: 10  21  
1: 21  10
```

From `/proc/meminfo`  
```
MemTotal: 394426740 kB  
HugePages_Total: 0  
Hugepagesize: 2048 kB
```

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

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SPEC CPU2017 Integer Rate Result

Huawei

Huawei CH121 V5 (Intel Xeon Gold 5215M)

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CPU2017 License: 3175
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Platform Notes (Continued)

```plaintext
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-2017-5754 (Meltdown): Not affected
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 Apr 11 08:20

SPEC is set to: /spec
    Filesystem Type  Size  Used Avail Use% Mounted on
    /dev/sda3      xfs   849G   88G  762G  11% /

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.
    BIOS INSYDE Corp. 6.52 03/16/2019
    Memory:
        24x Samsung M393A2K43CB2-CVF 16 GB 2 rank 2933, configured at 2666

(End of data from sysinfo program)
```

Compiler Version Notes

```
------------------------------------------------------------------------------
CC  500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base)
    557.xz_r(base)
------------------------------------------------------------------------------

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
    Version 19.0.1.144 Build 20180108
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

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Compiler Version Notes (Continued)

CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base) 541.leela_r(base)

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

FC 548.exchange2_r(base)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
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
Huawei CH121 V5 (Intel Xeon Gold 5215M)

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Base Optimization Flags

C benchmarks:
-\(-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4\)
-\(-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64 -lqkmalloc\)

C++ benchmarks:
-\(-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4\)
-\(-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64 -lqkmalloc\)

Fortran benchmarks:
-\(-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte\)
-\(-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64 -lqkmalloc\)

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/Huawei-Platform-Settings-SKL-V1.9-revC.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 CPU2017 v1.0.5 on 2019-04-12 21:14:24-0400.