## CPU2017 Integer Speed Result

### Huawei

**Huawei CH121 V5 (Intel Xeon Gold 6254)**

<table>
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<tr>
<th>Test Sponsor</th>
<th>Tested by</th>
<th>CPU2017 License</th>
<th>Test Date</th>
<th>Hardware Availability</th>
<th>Software Availability</th>
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</thead>
<tbody>
<tr>
<td>Huawei</td>
<td>Huawei</td>
<td>3175</td>
<td>Apr-2019</td>
<td>Apr-2019</td>
<td>Dec-2018</td>
</tr>
</tbody>
</table>

### SPECspeed2017_int_base

- SPECspeed2017_int_base = 10.2

### SPECspeed2017_int_peak

- SPECspeed2017_int_peak = Not Run

### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed2017_int_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench</td>
<td>36</td>
<td>6.94</td>
</tr>
<tr>
<td>gcc</td>
<td>36</td>
<td>10.0</td>
</tr>
<tr>
<td>mcf</td>
<td>36</td>
<td>7.04</td>
</tr>
<tr>
<td>omnetpp</td>
<td>36</td>
<td>12.7</td>
</tr>
<tr>
<td>xalancbmk</td>
<td>36</td>
<td>14.5</td>
</tr>
<tr>
<td>x264</td>
<td>36</td>
<td>23.5</td>
</tr>
<tr>
<td>deepsjeng</td>
<td>36</td>
<td>5.60</td>
</tr>
<tr>
<td>leela</td>
<td>36</td>
<td>4.90</td>
</tr>
<tr>
<td>exchange2</td>
<td>36</td>
<td>14.5</td>
</tr>
<tr>
<td>xz</td>
<td>36</td>
<td>23.5</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon Gold 6254
- **Max MHZ.:** 4000
- **Enabled:** 36 cores, 2 chips
- **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:** 24.75 MB I+D on chip per chip
- **Memory:** 384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R)
- **Storage:** 1 x 1200 GB SAS, 10000 RPM

### Software

- **OS:** SUSE Linux Enterprise Server 12 SP4 (x86_64) 4.12.14-94.41-default
- **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
- **Parallel:** Yes
- **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:** jemalloc memory allocator V5.0.1
## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak Threads</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>36</td>
<td>258</td>
<td>6.89</td>
<td>256</td>
<td>6.94</td>
<td></td>
<td>255</td>
<td>6.95</td>
<td></td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>36</td>
<td>398</td>
<td>10.0</td>
<td></td>
<td>397</td>
<td>10.0</td>
<td></td>
<td>398</td>
<td>10.0</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>36</td>
<td>365</td>
<td>12.9</td>
<td>367</td>
<td>12.9</td>
<td></td>
<td>369</td>
<td>12.8</td>
<td></td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>36</td>
<td>210</td>
<td>7.76</td>
<td></td>
<td>205</td>
<td>7.96</td>
<td></td>
<td>205</td>
<td>7.94</td>
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<tr>
<td>623.xalancbmk_s</td>
<td>36</td>
<td>112</td>
<td>12.7</td>
<td>111</td>
<td>12.7</td>
<td></td>
<td>110</td>
<td>12.8</td>
<td></td>
</tr>
<tr>
<td>625.x264_s</td>
<td>36</td>
<td>122</td>
<td>14.5</td>
<td>121</td>
<td>14.5</td>
<td></td>
<td>122</td>
<td>14.5</td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>36</td>
<td>256</td>
<td>5.60</td>
<td></td>
<td>256</td>
<td>5.60</td>
<td></td>
<td>256</td>
<td>5.60</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>36</td>
<td>348</td>
<td>4.90</td>
<td>348</td>
<td>4.90</td>
<td></td>
<td>348</td>
<td>4.90</td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>36</td>
<td>203</td>
<td>14.5</td>
<td>203</td>
<td>14.5</td>
<td></td>
<td>204</td>
<td>14.4</td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td>36</td>
<td>263</td>
<td>23.5</td>
<td></td>
<td>263</td>
<td>23.5</td>
<td></td>
<td>264</td>
<td>23.4</td>
</tr>
</tbody>
</table>

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### Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

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### General Notes

Environment variables set by runcpu before the start of the run:
- KMP_AFFINITY = "granularity=fine,compact,1,0"
- LD_LIBRARY_PATH = "/spec/lib/ia32:/spec/lib/intel64:/spec/je5.0.1-32:/spec/je5.0.1-64"
- OMP_STACKSIZE = "192M"

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
```
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) is mitigated in the system as tested and documented.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
Huawei

Huawei CH121 V5 (Intel Xeon Gold 6254)

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

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

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## Platform Notes

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

Sysinfo program /spec/bin/sysinfo  
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9  
running on linux-7ejo Thu Apr 11 18:47:43 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](https://www.spec.org/cpu2017/Docs/config.html#sysinfo)

From /proc/cpuinfo

```plaintext
model name : Intel(R) Xeon(R) Gold 6254 CPU @ 3.10GHz
2 "physical id"s (chips)
36 "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 : 18
siblings : 18
physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
```

From lscpu:

```plaintext
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 36
On-line CPU(s) list: 0-35
Thread(s) per core: 1
Core(s) per socket: 18
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6254 CPU @ 3.10GHz
Stepping: 6
CPU MHz: 3100.000
CPU max MHz: 4000.0000
CPU min MHz: 1200.0000
BogoMIPS: 6200.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 25344K
```

(Continued on next page)
Platform Notes (Continued)

NUMA node0 CPU(s): 0-17
NUMA node1 CPU(s): 18-35
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 pdtemp gdtsc
lp constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmpref perf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtrp pdcm pcid dca sse4_1 sse4_2 x2apic 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 tpr_shadow vnmi flexpriority ept vpid
fsmsgsb tsc_adjust bni hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdt_a avx512f
avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl
xsaveopt xsaves xgetBV1 xsaves cqmc llc cqmq_occue llc cqmq mbm_total cqmq mbm_local
dtherm ida arat pln pts pku ospke avx512_vnni flush lld arch_capabilities

/proccpuinfo cache data
  cache size: 25344 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
  node 0 size: 191933 MB
  node 0 free: 184287 MB
  node 1 cpus: 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
  node 1 size: 193250 MB
  node 1 free: 186470 MB
  node distances:
    node 0 1
    0: 10 21
    1: 21 10

From /proc/meminfo
  MemTotal: 394428348 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
    # 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"

(Continued on next page)
Huawei

Huawei CH121 V5 (Intel Xeon Gold 6254)

SPECspeed2017_int_base = 10.2
SPECspeed2017_int_peak = Not Run

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

Platform Notes (Continued)

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 12:26

SPEC is set to: /spec
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 734G 100G 635G 14% /

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

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC  600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base)
657.xz_s(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.

==============================================================================
CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
641.leela_s(base)

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## SPEC CPU2017 Integer Speed Result

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### Compiler Version Notes (Continued)

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.

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FC 648.exchange2_s(base)

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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.

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### Base Compiler Invocation

C benchmarks:
```bash
icc -m64 -std=c11
```

C++ benchmarks:
```bash
icpc -m64
```

Fortran benchmarks:
```bash
ifort -m64
```

### 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.xalanchmk_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
Huawei CH121 V5 (Intel Xeon Gold 6254)

SPEC speed2017_int_base = 10.2
SPEC speed2017_int_peak = Not Run

Huawei

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

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

Base Optimization Flags

C benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

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:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs

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 2019-04-11 06:47:43-0400.