### SPEC® CPU2017 Integer Speed Result

**Huawei**

**Huawei G530 V5 (Intel Xeon Gold 6138)**

| Test Sponsor: | Huawei |
| Test Date: | Apr-2019 |
| Hardware Availability: | Jul-2017 |
| Software Availability: | Nov-2018 |

#### SPECspeed2017_int_base = 9.50

**SPECspeed2017_int_peak = Not Run**

<table>
<thead>
<tr>
<th>Test</th>
<th>Results</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>6.48</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>8.90</td>
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<tr>
<td>605.mcf_s</td>
<td>11.8</td>
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<tr>
<td>620.omnetpp_s</td>
<td>7.70</td>
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<tr>
<td>623.xalancbmk_s</td>
<td>11.9</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>13.8</td>
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<tr>
<td>631.deepsjeng_s</td>
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</tr>
<tr>
<td>641.leela_s</td>
<td>4.53</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>13.2</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>22.2</td>
</tr>
</tbody>
</table>

#### Hardware

- **CPU Name:** Intel Xeon Gold 6138
- **Max MHz.:** 3700
- **Nominal:** 2000
- **Enabled:** 40 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:** 27.5 MB I+D on chip per chip
- **Other:** None
- **Memory:** 384 GB (12 x 32 GB 2Rx4 PC4-2666V-R)
- **Storage:** 1 x 1920 GB SATA SSD
- **Other:** None

#### Software

- **OS:** Red Hat Enterprise Linux Server release 7.6 (Maipo)
- **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 1.09 Released Jan-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
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CPU2017 License: 3175
Test Sponsor: Huawei
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>40</td>
<td>276</td>
<td>6.42</td>
<td>274</td>
<td>6.48</td>
<td>274</td>
<td>6.48</td>
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<tr>
<td>602.gcc_s</td>
<td>40</td>
<td>448</td>
<td>8.90</td>
<td>432</td>
<td>9.22</td>
<td>449</td>
<td>8.86</td>
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<tr>
<td>605.mcf_s</td>
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<td>404</td>
<td>11.7</td>
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<td>400</td>
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<td>620.omnetpp_s</td>
<td>40</td>
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<td>7.70</td>
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<td>7.71</td>
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<tr>
<td>623.xalancbmk_s</td>
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<td>119</td>
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<td>5.22</td>
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<td>5.22</td>
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<td>5.21</td>
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<tr>
<td>641.leela_s</td>
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<td>378</td>
<td>4.51</td>
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<td>4.53</td>
<td>377</td>
<td>4.53</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>40</td>
<td>221</td>
<td>13.3</td>
<td>222</td>
<td>13.2</td>
<td>222</td>
<td>13.2</td>
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<tr>
<td>657.xz_s</td>
<td>40</td>
<td>278</td>
<td>22.2</td>
<td>279</td>
<td>22.2</td>
<td>278</td>
<td>22.2</td>
</tr>
</tbody>
</table>

SPECspeed2017_int_base = 9.50
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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"

General Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
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
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Huawei G530 V5 (Intel Xeon Gold 6138)

SPEC CPU2017 Integer Speed Result

<table>
<thead>
<tr>
<th>BIOS configuration:</th>
<th>Power Policy Set to Load Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hyper-Threading Set to Disable</td>
</tr>
<tr>
<td></td>
<td>XPT Prefetch Set to Enabled</td>
</tr>
<tr>
<td></td>
<td>Sysinfo program /spec2017/bin/sysinfo</td>
</tr>
<tr>
<td>Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9</td>
<td></td>
</tr>
<tr>
<td>running on localhost.localdomain Mon Apr 8 18:13:25 2019</td>
<td></td>
</tr>
</tbody>
</table>

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 6138 CPU @ 2.00GHz
  2 "physical id"s (chips)
  40 "processors"
core, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 20
siblings : 20
  physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
  physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
```

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: 1
Core(s) per socket: 20
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6138 CPU @ 2.00GHz
Stepping: 4
CPU MHz: 2001.000
CPU max MHz: 2001.0000
CPU min MHz: 1000.0000
BogoMIPS: 4000.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 28160K
```

(Continued on next page)
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CPU2017 License: 3175
Test Sponsor: Huawei
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Platform Notes (Continued)

NUMA node0 CPU(s): 0-19
NUMA node1 CPU(s): 20-39
Flags: fpu vme de pse tsc mnr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 cflush dtc acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
lm constant_tsc arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmperf eagerfpu pni pclmulqdq dtes64 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 3dnowprefetch cpb cat l3 intel_patin intel_pt ssbd
mbs ibpb stibp tpr_shadow vnmi fpxr fom tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid
rtm cqm mpx rdt_a avx512f avx512dq rdseed adx smap
clflushopt clwb avx512cd avx512bw avx512vl xsaved xsaveopt xsavec xgetbv1 cqm_llc
cqm_occupa llc cqm_mbb_total cqm_mbb_local dtherm ida arat pln pts pku ospke
spec_ctrl intel_stibp flush_lid

/cache data

cache size: 28160 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 18 19

node 0 size: 195187 MB
node 0 free: 186413 MB

node 1 cpus: 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39

node 1 size: 196608 MB
node 1 free: 189447 MB

node distances:

node 0 1
0: 10 21
1: 21 10

From /proc/meminfo

MemTotal: 394621960 KB
HugePages_Total: 0
Hugepagesize: 2048 KB

From /etc/*release* /etc/*version*

os-release:

NAME="Red Hat Enterprise Linux Server"
VERSION="7.6 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VARIANT="Server"
VARIANT_ID="server"
VERSION_ID="7.6"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.6 (Maipo)"
redhat-release: Red Hat Enterprise Linux Server release 7.6 (Maipo)
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**Platform Notes (Continued)**

system-release: Red Hat Enterprise Linux Server release 7.6 (Maipo)


uname -a:

```
Linux localhost.localdomain 3.10.0-957.el7.x86_64 #1 SMP Thu Oct 4 20:48:51 UTC 2018
x86_64 x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

- CVE-2017-5754 (Meltdown): Mitigation: PTI
- CVE-2017-5753 (Spectre variant 1): Mitigation: Load fences, __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS (kernel)

run-level 3 Apr 8 17:44

SPEC is set to: /spec2017

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda4      xfs   300G  6.7G  294G   3% /

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. 1.09 01/31/2019
Memory:
12x NO DIMM NO DIMM
12x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666

(End of data from sysinfo program)

**Compiler Version Notes**

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

```plaintext
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.
```

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

```plaintext
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
```
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**SPECspeed2017_int_base** = 9.50  
**SPECspeed2017_int_peak** = Not Run

**Compiler Version Notes (Continued)**

Version 19.0.1.144 Build 20181018  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------

FC 648.exchange2_s(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**

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmks: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leetcode_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

**Base Optimization Flags**

C benchmarks:
-W1, -z, muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP

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## Base Optimization Flags (Continued)

**C benchmarks (continued):**

- `-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:


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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 2019-04-08 18:13:24-0400.  