Huawei
Huawei 5288 V5 (Intel Xeon Gold 6134)

SPECrater2017_int_base = 111
SPECrater2017_int_peak = 117

Hardware
CPU Name: Intel Xeon Gold 6134
Max MHz.: 3700
Nominal: 3200
Enabled: 16 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: 24.75 MB I+D on chip per chip
Other: None
Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)
Storage: 1 x 1200 GB SAS, 10000 RPM
Other: None

Software
OS: Red Hat Enterprise Linux Server release 7.4 (Maipo) 3.10.0-693.11.6.el7.x86_64
Compiler: C/C++: Version 18.0.2.199 of Intel C/C++ Compiler for Linux;
Fortran: Version 18.0.2.199 of Intel Fortran Compiler for Linux
Parallel: No
Firmware: Version 0.81 Released Jul-2018
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other: jemalloc memory allocator V5.0.1
SPEC CPU2017 Integer Rate Result

Huawei
Huawei 5288 V5 (Intel Xeon Gold 6134)

SPECrate2017_int_base = 111
SPECrate2017_int_peak = 117

CPU2017 License: 3175
Test Date: Aug-2018
Test Sponsor: Huawei
Hardware Availability: Jul-2017
Tested by: Huawei
Software Availability: Mar-2018

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Copies</td>
<td>Seconds</td>
</tr>
<tr>
<td>500.perlbench_r</td>
<td>32</td>
<td>623</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>32</td>
<td>467</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>32</td>
<td>371</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>32</td>
<td>604</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>32</td>
<td>280</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>32</td>
<td>257</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>32</td>
<td>385</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>32</td>
<td>602</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>32</td>
<td>406</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>32</td>
<td>435</td>
</tr>
</tbody>
</table>

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:

Binaries compiled on a system with 1x Intel Core i7-6700K 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.:
numactl --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) is mitigated in the system as tested and documented.

(Continued on next page)
# SPEC CPU2017 Integer Rate Result

**Huawei**

**Huawei 5288 V5 (Intel Xeon Gold 6134)**

<table>
<thead>
<tr>
<th>SPECrate2017_int_base = 111</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_int_peak = 117</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 3175  
**Test Sponsor:** Huawei  
**Test Date:** Aug-2018  
**Tested by:** Huawei  
**Hardware Availability:** Jul-2017  
**Software Availability:** Mar-2018

## General Notes (Continued)

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

## Platform Notes

BIOS configuration:  
Power Policy Set to Performance  
SNC Set to Enabled  
IMC Interleaving Set to 1-way Interleave  
XPT Prefetch Set to Enabled  
Sysinfo program /spec2017/bin/sysinfo  
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618b0091c0f  
running on localhost.localdomain Wed Aug 22 06:06:28 2018

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 6134 CPU @ 3.20GHz  
  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 : 8  
siblings : 16  
physical 0: cores 0 2 3 9 16 19 26 27  
physical 1: cores 1 3 4 6 7 18 20 22

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: 2  
Core(s) per socket: 8  
Socket(s): 2  
NUMA node(s): 4  
Vendor ID: GenuineIntel  
CPU family: 6  
Model: 85  
Model name: Intel(R) Xeon(R) Gold 6134 CPU @ 3.20GHz  
Stepping: 4  
CPU MHz: 3200.000

(Continued on next page)
Huawei 5288 V5 (Intel Xeon Gold 6134)

<table>
<thead>
<tr>
<th>SPECrate2017_int_base</th>
<th>111</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_int_peak</td>
<td>117</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Platform Notes (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BogoMIPS: 6400.00</td>
</tr>
<tr>
<td>Virtualization: VT-x</td>
</tr>
<tr>
<td>L1d cache: 32K</td>
</tr>
<tr>
<td>L1i cache: 32K</td>
</tr>
<tr>
<td>L2 cache: 1024K</td>
</tr>
<tr>
<td>L3 cache: 25344K</td>
</tr>
<tr>
<td>NUMA node0 CPU(s): 0,1,3,16,17,19,20</td>
</tr>
<tr>
<td>NUMA node1 CPU(s): 2,5-7,18,21-23</td>
</tr>
<tr>
<td>NUMA node2 CPU(s): 8-10,13,24-26,29</td>
</tr>
<tr>
<td>NUMA node3 CPU(s): 11,12,14,15,27,28,30,31</td>
</tr>
<tr>
<td>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 pdpes1gb 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 fma cx16 xtpr 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 cdp_l3 invpcid_single intel_pt spec_cr1 ibpb_support tpr_shadow vmprioritie ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erts invpcid rtm cqm mpx rdt_a avx512if avx512dq rdseed adx smap cfiflushopt cfiwb avx512cd avx512bw avx512vl xsaveopt xsaveopt xsave vsetbv1 cqm_llc cqm_occup LLC cqm_mbm_total cqm_mbm_local dtherm ida arat pln pts</td>
</tr>
</tbody>
</table>

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

From /proc/cpuinfo cache data

```
From /proc/meminfo
```

(Continued on next page)
### Huawei 5288 V5 (Intel Xeon Gold 6134)

<table>
<thead>
<tr>
<th>CPU2017 License</th>
<th>Test Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>3175</td>
<td>Aug-2018</td>
</tr>
<tr>
<td>Huawei</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tested by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huawei</td>
</tr>
</tbody>
</table>

**SPECrate2017_int_base = 111**  
**SPECrate2017_int_peak = 117**

**Platform Notes (Continued)**

- MemTotal: 394174484 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

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

```plaintext
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.4 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VARIANT="Server"
VARIANT_ID="server"
VERSION_ID="7.4"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.4 (Maipo)"
redhat-release: Red Hat Enterprise Linux Server release 7.4 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.4 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.4:ga:server
```

```plaintext
uname -a:  
Linux localhost.localdomain 3.10.0-693.11.6.el7.x86_64 #1 SMP Thu Dec 28 14:23:39 EST 2017 x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3  
Aug 22 06:05

**SPEC is set to:** `/spec2017`

**Filesystem**  
<table>
<thead>
<tr>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>xfs</td>
<td>1.8T</td>
<td>53G</td>
<td>1.7T</td>
<td>3%</td>
<td>/</td>
</tr>
</tbody>
</table>

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. 0.81 07/02/2018
- Memory:  
  - 24x Samsung M393A2K43BB1-CTD 16 GB 2 rank 2666

(End of data from `sysinfo` program)

**Compiler Version Notes**

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

**icc (ICC) 18.0.2 20180210**

Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

(Continued on next page)
 SPEC CPU2017 Integer Rate Result

Huawei
Huawei 5288 V5 (Intel Xeon Gold 6134)

| SPECrate2017_int_base = 111 |
| SPECrate2017_int_peak = 117 |

| CPU2017 License: | 3175 |
| Test Sponsor: | Huawei |
| Tested by: | Huawei |
| Test Date: | Aug-2018 |
| Hardware Availability: | Jul-2017 |
| Software Availability: | Mar-2018 |

### Compiler Version Notes (Continued)

```plaintext
-----------------------------------------------
CC  500.perlbench_r(peak) 502.gcc_r(peak) 505.mcf_r(peak) 525.x264_r(peak)
     557.xz_r(peak)
-----------------------------------------------
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

-----------------------------------------------
CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
     541.leela_r(base)
-----------------------------------------------
icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

-----------------------------------------------
CXXC 520.omnetpp_r(peak) 523.xalancbmk_r(peak) 531.deepsjeng_r(peak)
     541.leela_r(peak)
-----------------------------------------------
icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

-----------------------------------------------
FC  548.exchange2_r(base)
-----------------------------------------------
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

-----------------------------------------------
FC  548.exchange2_r(peak)
-----------------------------------------------
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

### Base Compiler Invocation

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

(Continued on next page)
Huawei
Huawei 5288 V5 (Intel Xeon Gold 6134)

<table>
<thead>
<tr>
<th>SPECrate2017_int_base = 111</th>
<th>SPECrate2017_int_peak = 117</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2017 License: 3175</td>
<td>Test Date: Aug-2018</td>
</tr>
<tr>
<td>Test Sponsor: Huawei</td>
<td>Hardware Availability: Jul-2017</td>
</tr>
<tr>
<td>Tested by: Huawei</td>
<td>Software Availability: Mar-2018</td>
</tr>
</tbody>
</table>

Base Compiler Invocation (Continued)

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

Base Optimization Flags

C benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -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=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs
-L/usr/local/je5.0.1-64/lib -ljemalloc

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m64 -std=c11

(Continued on next page)
Huawei

Huawei 5288 V5 (Intel Xeon Gold 6134)

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

<table>
<thead>
<tr>
<th>SPECrate2017_int_peak</th>
<th>SPECrate2017_int_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>117</td>
<td>111</td>
</tr>
</tbody>
</table>

Test Date: Aug-2018
Hardware Availability: Jul-2017
Software Availability: Mar-2018

Peak Compiler Invocation (Continued)

502.gcc_r.icc -m32 -std=c11 -L/home/prasadj/specdev/IC18u2_Internal/lin_18_0_20180210/compiler/lib/ia32_lin

C++ benchmarks (except as noted below):
icpc -m64

523.xalancbmk_r.icpc -m32 -L/home/prasadj/specdev/IC18u2_Internal/lin_18_0_20180210/compiler/lib/ia32_lin

Fortran benchmarks:
ifort -m64

Peak Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -D_FILE_OFFSET_BITS=64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalanchbk_r: -D_FILE_OFFSET_BITS=64 -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

Peak Optimization Flags

C benchmarks:

500.perlbench_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -03 -no-prec-div -qopt-mem-layout-trans=3
-fno-strict-overflow -L/usr/local/je5.0.1-64/lib
-ljemalloc

502.gcc_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -03 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-32/lib -ljemalloc

505.mcf_r: basepeak = yes
525.x264_r: basepeak = yes
557.xz_r: basepeak = yes

(Continued on next page)
Peak Optimization Flags (Continued)

C++ benchmarks:

520.omnetpp_r: basepeak = yes

523.xalancbmk_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-32/lib -ljemalloc

531.deepsjeng_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-64/lib -ljemalloc

541.leela_r: Same as 531.deepsjeng_r

Fortran benchmarks:

548.exchange2_r: basepeak = yes

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/Intel-ic18.0-official-linux64.2017-12-21.xml
http://www.spec.org/cpu2017/flags/Huawei-Platform-Settings-SKL-V1.9-revC.xml

SPEC is a registered trademark of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2017 v1.0.2 on 2018-08-22 06:06:27-0400.
Originally published on 2018-09-18.