SPEC® CPU2017 Integer Rate Result

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Huawei

Huawei 9008 V5 (Intel Xeon Platinum 8153)

$SPECrate2017\_int\_base =$ 554

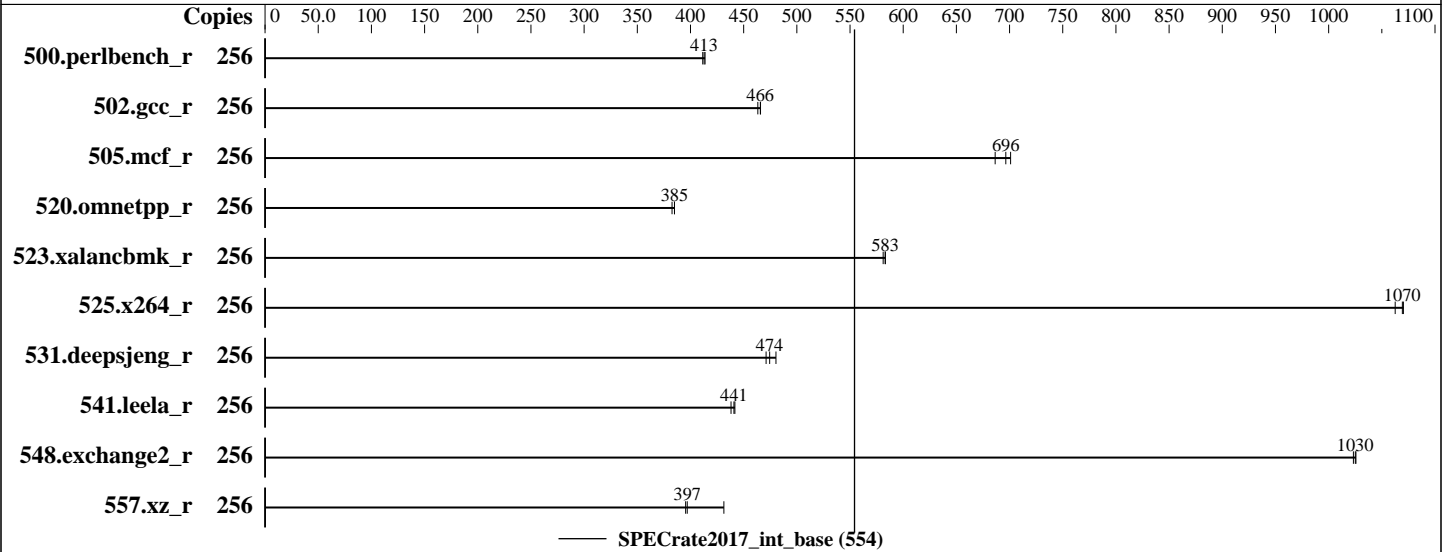$SPECrate2017\_int\_peak =$ Not Run

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

Test Date: Jun-2018
Hardware Availability: Jul-2018
Software Availability: Mar-2018

Benchmark	Copies	Result
500.perlbench_r	256	413
502.gcc_r	256	466
505.mcf_r	256	696
520.omnetpp_r	256	385
523.xalancbmk_r	256	583
525.x264_r	256	1070
531.deepsjeng_r	256	474
541.leela_r	256	441
548.exchange2_r	256	1030
557.xz_r	256	397

SPECrate2017_int_base (554)

Hardware

CPU Name: Intel Xeon Platinum 8153
 Max MHz.: 2800
 Nominal: 2000
Enabled: 128 cores, 8 chips, 2 threads/core
Orderable: 2,4,6,8 chips
Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 22 MB I+D on chip per chip
 Other: None
Memory: 1536 GB (48 x 32 GB 2Rx4 PC4-2666V-R)
Storage: 2 x 900 GB SAS HDD 10K RPM, RAID 0
Other: None

Software

OS: SUSE Linux Enterprise Server 12 SP2
 4.4.120-92.70-default
Compiler: C/C++: Version 18.0.0.128 of Intel C/C++
 Compiler for Linux;
 Fortran: Version 18.0.0.128 of Intel Fortran
 Compiler for Linux
Parallel: No
Firmware: Version 0.80 released Feb-2018
File System: ext4
System State: Run level 5 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: jemalloc: jemalloc memory allocator library V5.0.1

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https://www.spec.org/

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	256	990	412	**987**	**413**	985	414							
502.gcc_r	256	**778**	**466**	782	463	778	466							
505.mcf_r	256	590	701	**594**	**696**	603	686							
520.omnetpp_r	256	878	383	872	385	**873**	**385**							
523.xalancbmk_r	256	464	583	**464**	**583**	465	581							
525.x264_r	256	422	1060	419	1070	**419**	**1070**							
531.deepsjeng_r	256	611	480	623	471	**618**	**474**							
541.leela_r	256	960	442	**962**	**441**	968	438							
548.exchange2_r	256	655	1020	654	1030	**654**	**1030**							
557.xz_r	256	641	431	**697**	**397**	699	395							

SPECrate2017_int_base = 554

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"
Numa balancing was disabled using "echo 0 > /proc/sys/kernel/numa_balancing"
```

General Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/je5.0.1-64"

 Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
 memory using Redhat Enterprise Linux 7.4
 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>

 jemalloc: configured and built at default for
 32bit (i686) and 64bit (x86_64) targets;
 jemalloc: built with the RedHat Enterprise 7.4,
```

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General Notes (Continued)

and the system compiler gcc 4.8.5;
jemalloc: sources avilable from jemalloc.net or
https://github.com/jemalloc/jemalloc/releases;
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.

Platform Notes

```
 BIOS configuration:
 Sub NUMA Cluster (SNC) set to enabled
 IMC (Integrated memory controller) Interleaving set to 1 way interleave
 Xtended Prediction Table (XPT) Prefetch set to Enable
 Memory Patrol Scrub set to Disable
 Last Level Cache (LLC) Prefetch set to Disable
 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
 running on linux-0mnb Wed Jun  6 22:43:50 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) Platinum 8153 CPU @ 2.00GHz
       8  "physical id"s (chips)
       256 "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  : 32
       physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
       physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
       physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
       physical 3: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
       physical 4: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
       physical 5: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
       physical 6: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
       physical 7: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

 From lscpu:
      Architecture:          x86_64
      CPU op-mode(s):        32-bit, 64-bit
```

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Platform Notes (Continued)

```
       Byte Order:            Little Endian
       CPU(s):                256
       On-line CPU(s) list:   0-255
       Thread(s) per core:    2
       Core(s) per socket:    16
       Socket(s):             8
       NUMA node(s):          16
       Vendor ID:             GenuineIntel
       CPU family:            6
       Model:                 85
       Model name:            Intel(R) Xeon(R) Platinum 8153 CPU @ 2.00GHz
       Stepping:              4
       CPU MHz:               2000.036
       BogoMIPS:              4000.07
       Virtualization:        VT-x
       L1d cache:             32K
       L1i cache:             32K
       L2 cache:              1024K
       L3 cache:              22528K
       NUMA node0 CPU(s):     0-3,8-11,128-131,136-139
       NUMA node1 CPU(s):     4-7,12-15,132-135,140-143
       NUMA node2 CPU(s):     16-19,24-27,144-147,152-155
       NUMA node3 CPU(s):     20-23,28-31,148-151,156-159
       NUMA node4 CPU(s):     32-35,40-43,160-163,168-171
       NUMA node5 CPU(s):     36-39,44-47,164-167,172-175
       NUMA node6 CPU(s):     48-51,56-59,176-179,184-187
       NUMA node7 CPU(s):     52-55,60-63,180-183,188-191
       NUMA node8 CPU(s):     64-67,72-75,192-195,200-203
       NUMA node9 CPU(s):     68-71,76-79,196-199,204-207
       NUMA node10 CPU(s):    80-83,88-91,208-211,216-219
       NUMA node11 CPU(s):    84-87,92-95,212-215,220-223
       NUMA node12 CPU(s):    96-99,104-107,224-227,232-235
       NUMA node13 CPU(s):    100-103,108-111,228-231,236-239
       NUMA node14 CPU(s):    112-115,120-123,240-243,248-251
       NUMA node15 CPU(s):    116-119,124-127,244-247,252-255
       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 nopl xtopology nonstop_tsc
     aperfmperf eagerfpu pni pclmulqdq dtes64 ds_cpl vmx smx est tm2 ssse3 sdbg 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 ida arat epb invpcid_single pln pts dtherm
     intel_pt rsb_ctxsw spec_ctrl stibp retpoline kaiser tpr_shadow vnmi flexpriority ept
     vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx avx512f
     avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsavec
     xgetbv1 cqm_llc cqm_occup_llc

   /proc/cpuinfo cache data
```

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Platform Notes (Continued)

```
    cache size : 22528 KB

 From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
 physical chip.
   available: 16 nodes (0-15)
   node 0 cpus: 0 1 2 3 8 9 10 11 128 129 130 131 136 137 138 139
   node 0 size: 94993 MB
   node 0 free: 94453 MB
   node 1 cpus: 4 5 6 7 12 13 14 15 132 133 134 135 140 141 142 143
   node 1 size: 96762 MB
   node 1 free: 96542 MB
   node 2 cpus: 16 17 18 19 24 25 26 27 144 145 146 147 152 153 154 155
   node 2 size: 96762 MB
   node 2 free: 96536 MB
   node 3 cpus: 20 21 22 23 28 29 30 31 148 149 150 151 156 157 158 159
   node 3 size: 96762 MB
   node 3 free: 96580 MB
   node 4 cpus: 32 33 34 35 40 41 42 43 160 161 162 163 168 169 170 171
   node 4 size: 96762 MB
   node 4 free: 96575 MB
   node 5 cpus: 36 37 38 39 44 45 46 47 164 165 166 167 172 173 174 175
   node 5 size: 96762 MB
   node 5 free: 96586 MB
   node 6 cpus: 48 49 50 51 56 57 58 59 176 177 178 179 184 185 186 187
   node 6 size: 96762 MB
   node 6 free: 96622 MB
   node 7 cpus: 52 53 54 55 60 61 62 63 180 181 182 183 188 189 190 191
   node 7 size: 96762 MB
   node 7 free: 96385 MB
   node 8 cpus: 64 65 66 67 72 73 74 75 192 193 194 195 200 201 202 203
   node 8 size: 96762 MB
   node 8 free: 96617 MB
   node 9 cpus: 68 69 70 71 76 77 78 79 196 197 198 199 204 205 206 207
   node 9 size: 96762 MB
   node 9 free: 96618 MB
   node 10 cpus: 80 81 82 83 88 89 90 91 208 209 210 211 216 217 218 219
   node 10 size: 96762 MB
   node 10 free: 96583 MB
   node 11 cpus: 84 85 86 87 92 93 94 95 212 213 214 215 220 221 222 223
   node 11 size: 96762 MB
   node 11 free: 96611 MB
   node 12 cpus: 96 97 98 99 104 105 106 107 224 225 226 227 232 233 234 235
   node 12 size: 96762 MB
   node 12 free: 96612 MB
   node 13 cpus: 100 101 102 103 108 109 110 111 228 229 230 231 236 237 238 239
   node 13 size: 96762 MB
   node 13 free: 96591 MB
```

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Platform Notes (Continued)

```
   node 14 cpus: 112 113 114 115 120 121 122 123 240 241 242 243 248 249 250 251
   node 14 size: 96762 MB
   node 14 free: 96618 MB
   node 15 cpus: 116 117 118 119 124 125 126 127 244 245 246 247 252 253 254 255
   node 15 size: 96605 MB
   node 15 free: 96409 MB
   node distances:
   node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
     0:  10  20  20  20  20  20  20  20  20  20  20  20  20  20  20  20
     1:  20  10  20  20  20  20  20  20  20  20  20  20  20  20  20  20
     2:  20  20  10  20  20  20  20  20  20  20  20  20  20  20  20  20
     3:  20  20  20  10  20  20  20  20  20  20  20  20  20  20  20  20
     4:  20  20  20  20  10  20  20  20  20  20  20  20  20  20  20  20
     5:  20  20  20  20  20  10  20  20  20  20  20  20  20  20  20  20
     6:  20  20  20  20  20  20  10  20  20  20  20  20  20  20  20  20
     7:  20  20  20  20  20  20  20  10  20  20  20  20  20  20  20  20
     8:  20  20  20  20  20  20  20  20  10  20  20  20  20  20  20  20
     9:  20  20  20  20  20  20  20  20  20  10  20  20  20  20  20  20
    10:  20  20  20  20  20  20  20  20  20  20  10  20  20  20  20  20
    11:  20  20  20  20  20  20  20  20  20  20  20  10  20  20  20  20
    12:  20  20  20  20  20  20  20  20  20  20  20  20  10  20  20  20
    13:  20  20  20  20  20  20  20  20  20  20  20  20  20  10  20  20
    14:  20  20  20  20  20  20  20  20  20  20  20  20  20  20  10  20
    15:  20  20  20  20  20  20  20  20  20  20  20  20  20  20  20  10

 From /proc/meminfo
    MemTotal:       1583378172 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 /usr/bin/lsb_release -d
    SUSE Linux Enterprise Server 12 SP2

 From /etc/*release* /etc/*version*
    SuSE-release:
       SUSE Linux Enterprise Server 12 (x86_64)
       VERSION = 12
       PATCHLEVEL = 2
       # 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-SP2"
       VERSION_ID="12.2"
       PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
       ID="sles"
       ANSI_COLOR="0;32"
```

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Platform Notes (Continued)

```
        CPE_NAME="cpe:/o:suse:sles:12:sp2"

 uname -a:
    Linux linux-0mnb 4.4.120-92.70-default #1 SMP Wed Mar 14 15:59:43 UTC 2018 (52a83de)
    x86_64 x86_64 x86_64 GNU/Linux

 run-level 5 Jun 6 22:35

 SPEC is set to: /home/cpu2017
    Filesystem      Type   Size  Used Avail Use% Mounted on
    /dev/sda4       btrfs  1.5T   14G  1.5T   1% /home

 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. 0.80 02/24/2018
   Memory:
    48x NO DIMM NO DIMM
    48x Samsung M393A4K40BB2-CTD 32 GB 2 rank 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)
------------------------------------------------------------------------------
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
 CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
      541.leela_r(base)
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
 FC  548.exchange2_r(base)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
```

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Compiler Version Notes (Continued)

```
--------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icc`

C++ benchmarks:
`icpc`

Fortran benchmarks:
`ifort`

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 -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc
```

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Base Other Flags

C benchmarks:
-m64 -std=c11

C++ benchmarks:
-m64

Fortran benchmarks:
-m64

The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html
http://www.spec.org/cpu2017/flags/Huawei-Platform-Settings-SKL-V1.7.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml
http://www.spec.org/cpu2017/flags/Huawei-Platform-Settings-SKL-V1.7.xml

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

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