SPEC® CPU2017 Integer Speed Result

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Huawei

Huawei 2488H V5 (Intel Xeon Gold 6138)

$SPECspeed2017\_int\_base =$ 8.56

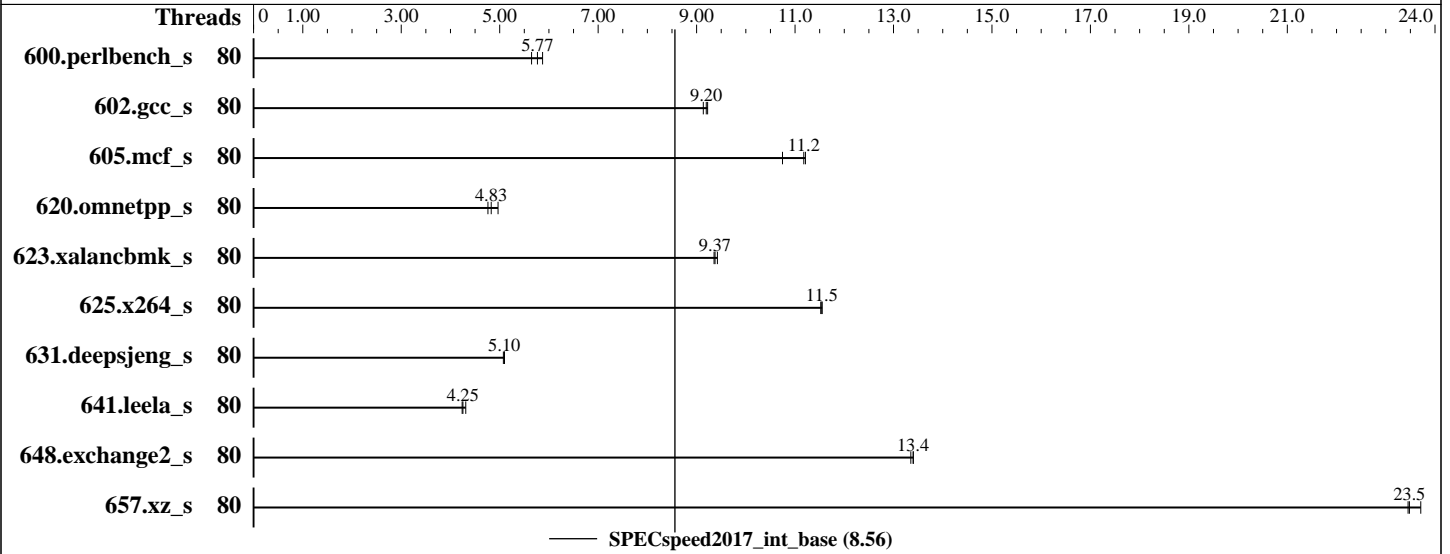$SPECspeed2017\_int\_peak =$ Not Run

CPU2017 License: 3175

Test Sponsor: Huawei

Tested by: Huawei

Test Date: May-2018

Hardware Availability: May-2018

Software Availability: Mar-2018

Threads	Result
600.perlbench_s 80	5.77
602.gcc_s 80	9.20
605.mcf_s 80	11.2
620.omnetpp_s 80	4.83
623.xalancbmk_s 80	9.37
625.x264_s 80	11.5
631.deepsjeng_s 80	5.10
641.leela_s 80	4.25
648.exchange2_s 80	13.4
657.xz_s 80	23.5

SPECspeed2017_int_base (8.56)

Hardware

CPU Name: Intel Xeon Gold 6138

 Max MHz.: 3700

 Nominal: 2000

Enabled: 80 cores, 4 chips

Orderable: 2,4 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: 1536 GB (48 x 32 GB 2Rx4 PC4-2666V-R)

Storage: 1 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: Yes

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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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	80	302	5.87	**308**	**5.77**	314	5.65							
602.gcc_s	80	**433**	**9.20**	432	9.22	436	9.14							
605.mcf_s	80	439	10.7	421	11.2	**422**	**11.2**							
620.omnetpp_s	80	343	4.76	328	4.97	**338**	**4.83**							
623.xalancbmk_s	80	151	9.35	**151**	**9.37**	150	9.42							
625.x264_s	80	153	11.5	**153**	**11.5**	153	11.5							
631.deepsjeng_s	80	**281**	**5.10**	281	5.10	282	5.07							
641.leela_s	80	403	4.24	**401**	**4.25**	396	4.31							
648.exchange2_s	80	219	13.4	220	13.4	**219**	**13.4**							
657.xz_s	80	264	23.5	**263**	**23.5**	261	23.7							

SPECspeed2017_int_base =	**8.56**
SPECspeed2017_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,
and the system compiler gcc 4.8.5;

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General Notes (Continued)

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
 Hyper-Threading set to Disable
 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
 running on linux-oyf8 Thu May 31 20:49:13 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 6138 CPU @ 2.00GHz
       4  "physical id"s (chips)
       80 "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 : 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
       physical 2: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
       physical 3: 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):                80
    On-line CPU(s) list:   0-79
    Thread(s) per core:    1
```

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Platform Notes (Continued)

```
      Core(s) per socket:    20
      Socket(s):             4
      NUMA node(s):          8
      Vendor ID:             GenuineIntel
      CPU family:            6
      Model:                 85
      Model name:            Intel(R) Xeon(R) Gold 6138 CPU @ 2.00GHz
      Stepping:              4
      CPU MHz:               1000.000
      CPU max MHz:           2001.0000
      CPU min MHz:           1000.0000
      BogoMIPS:              4000.07
      Virtualization:        VT-x
      L1d cache:             32K
      L1i cache:             32K
      L2 cache:              1024K
      L3 cache:              28160K
      NUMA node0 CPU(s):     0-2,5,6,10-12,15,16
      NUMA node1 CPU(s):     3,4,7-9,13,14,17-19
      NUMA node2 CPU(s):     20-22,25,26,30-32,35,36
      NUMA node3 CPU(s):     23,24,27-29,33,34,37-39
      NUMA node4 CPU(s):     40-42,45,46,50-52,55,56
      NUMA node5 CPU(s):     43,44,47-49,53,54,57-59
      NUMA node6 CPU(s):     60-62,65,66,70-72,75,76
      NUMA node7 CPU(s):     63,64,67-69,73,74,77-79
      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 monitor 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
    cache size : 28160 KB

 From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
 physical chip.
    available: 8 nodes (0-7)
    node 0 cpus: 0 1 2 5 6 10 11 12 15 16
    node 0 size: 191756 MB
    node 0 free: 191214 MB
    node 1 cpus: 3 4 7 8 9 13 14 17 18 19
    node 1 size: 193524 MB
```

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Platform Notes (Continued)

```
   node 1 free: 193284 MB
   node 2 cpus: 20 21 22 25 26 30 31 32 35 36
   node 2 size: 193524 MB
   node 2 free: 193337 MB
   node 3 cpus: 23 24 27 28 29 33 34 37 38 39
   node 3 size: 193524 MB
   node 3 free: 193326 MB
   node 4 cpus: 40 41 42 45 46 50 51 52 55 56
   node 4 size: 193524 MB
   node 4 free: 193283 MB
   node 5 cpus: 43 44 47 48 49 53 54 57 58 59
   node 5 size: 193524 MB
   node 5 free: 193400 MB
   node 6 cpus: 60 61 62 65 66 70 71 72 75 76
   node 6 size: 193524 MB
   node 6 free: 193304 MB
   node 7 cpus: 63 64 67 68 69 73 74 77 78 79
   node 7 size: 193367 MB
   node 7 free: 193158 MB
   node distances:
   node   0   1   2   3   4   5   6   7
     0:  10  20  20  20  20  20  20  20
     1:  20  10  20  20  20  20  20  20
     2:  20  20  10  20  20  20  20  20
     3:  20  20  20  10  20  20  20  20
     4:  20  20  20  20  10  20  20  20
     5:  20  20  20  20  20  10  20  20
     6:  20  20  20  20  20  20  10  20
     7:  20  20  20  20  20  20  20  10

 From /proc/meminfo
    MemTotal:       1583380332 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"
```

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Platform Notes (Continued)

```
        VERSION="12-SP2"
        VERSION_ID="12.2"
        PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
        ID="sles"
        ANSI_COLOR="0;32"
        CPE_NAME="cpe:/o:suse:sles:12:sp2"

  uname -a:
     Linux linux-oyf8 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 May 30 11:56

  SPEC is set to: /home/cpu2017
     Filesystem      Type   Size  Used Avail Use% Mounted on
     /dev/sda4       btrfs  736G   14G  721G   2% /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 Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666

  (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)
------------------------------------------------------------------------------
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
  CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
      641.leela_s(base)
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
```

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$SPECspeed2017\_int\_base =$ 8.56

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Compiler Version Notes (Continued)

```
 FC  648.exchange2_s(base)
-------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
-------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icc`

C++ benchmarks:
`icpc`

Fortran benchmarks:
`ifort`

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.xalancbmk_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`

Base Optimization Flags

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

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Base Optimization Flags (Continued)

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
```

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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