SPEC® CPU2017 Integer Speed Result

Fujitsu

PRIMERGY CX2550 M5, Intel Xeon Gold 6244, 3.60 GHz

$SPECspeed2017\_int\_base =$ 10.7

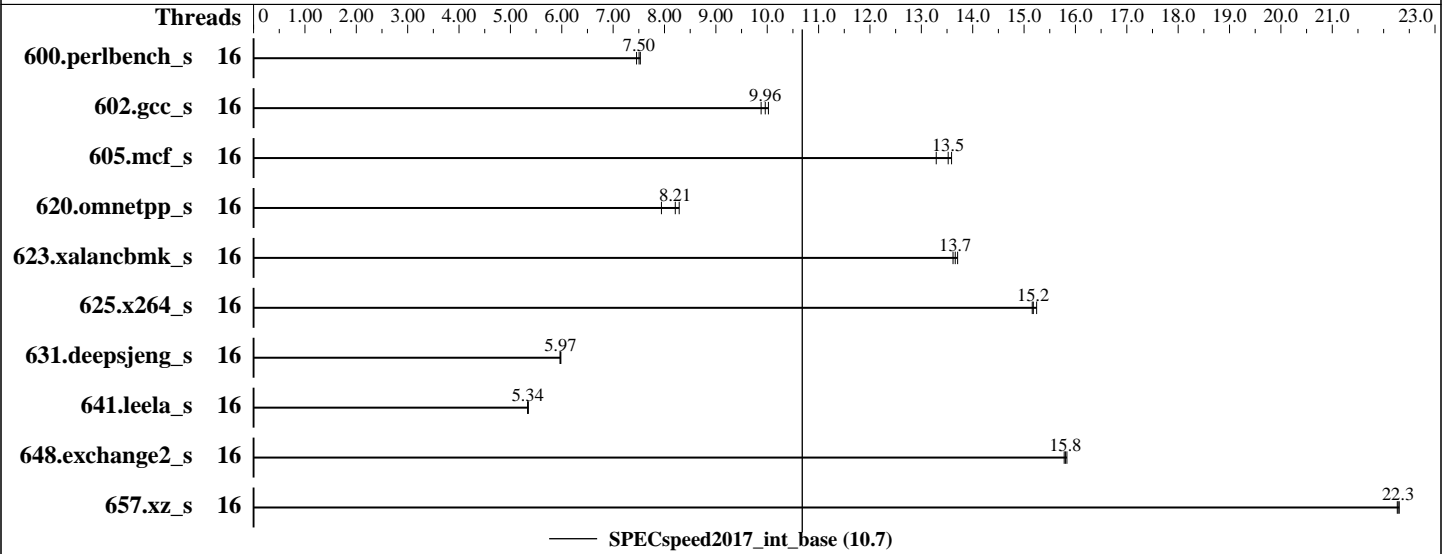$SPECspeed2017\_int\_peak =$ Not Run

CPU2017 License: 19
Test Sponsor: Fujitsu
Tested by: Fujitsu

Test Date: May-2019
Hardware Availability: Apr-2019
Software Availability: Feb-2019

Threads

Benchmark	Threads	Result
600.perlbench_s	16	7.50
602.gcc_s	16	9.96
605.mcf_s	16	13.5
620.omnetpp_s	16	8.21
623.xalancbmk_s	16	13.7
625.x264_s	16	15.2
631.deepsjeng_s	16	5.97
641.leela_s	16	5.34
648.exchange2_s	16	15.8
657.xz_s	16	22.3

SPECspeed2017_int_base (10.7)

Hardware

CPU Name: Intel Xeon Gold 6244
 Max MHz.: 4400
 Nominal: 3600
Enabled: 16 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
 Other: None
Memory: 384 GB (12 x 32 GB 2Rx4 PC4-2933Y-R)
Storage: 1 x SATA M.2 SSD, 240GB
Other: None

Software

OS: SUSE Linux Enterprise Server 15
 4.12.14-25.28-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: Fujitsu BIOS Version V1.0.0.0 R1.6.0 for D3853-B1x. Released Jun-2019 tested as V1.0.0.0 R1.3.3 for D3853-B1x Mar-2019
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: jemalloc memory allocator V5.0.1

https://www.spec.org/

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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	16	236	7.53	**237**	**7.50**	238	7.46							
602.gcc_s	16	397	10.0	403	9.88	**400**	**9.96**							
605.mcf_s	16	355	13.3	**349**	**13.5**	347	13.6							
620.omnetpp_s	16	197	8.29	205	7.94	**199**	**8.21**							
623.xalancbmk_s	16	103	13.7	**104**	**13.7**	104	13.6							
625.x264_s	16	116	15.2	116	15.2	**116**	**15.2**							
631.deepsjeng_s	16	240	5.97	**240**	**5.97**	240	5.98							
641.leela_s	16	320	5.34	**320**	**5.34**	319	5.35							
648.exchange2_s	16	186	15.8	186	15.8	**186**	**15.8**							
657.xz_s	16	277	22.3	**277**	**22.3**	278	22.3							

SPECspeed2017_int_base =	**10.7**
SPECspeed2017_int_peak =	**Not Run**

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,scatter"
LD_LIBRARY_PATH = "/home/Benchmark/cascadelake_speccpu2017_speed_int_TEST/lib/ia32"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/Benchmark/cascadelake_speccpu2017_speed_int_TEST/lib/intel64"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/Benchmark/cascadelake_speccpu2017_speed_int_TEST/je5.0.1-32"
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
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;
jemalloc: sources available via jemalloc.net
NA: 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.

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Platform Notes

```
  BIOS configuration:
  Hyper-Threading = Disabled
  Power Technology = Custom
  Override OS Energy Performance = Enabled
  Patrol Scrub = Disabled
  Uncore Frequency Scaling = Disabled
  Sub NUMA Clustering = Disabled
  WR CRC feature Control = Disabled
  Sysinfo program /home/Benchmark/cascadelake_speccpu2017_speed_TEST/bin/sysinfo
  Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
  running on linux-dftw Thu May  9 10:17:31 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

  From /proc/cpuinfo
     model name : Intel(R) Xeon(R) Gold 6244 CPU @ 3.60GHz
        2  "physical id"s (chips)
        16 "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  : 8
        physical 0: cores 2 4 8 9 11 17 18 20
        physical 1: cores 2 3 4 8 17 20 24 27

  From lscpu:
     Architecture:          x86_64
     CPU op-mode(s):        32-bit, 64-bit
     Byte Order:            Little Endian
     CPU(s):                16
     On-line CPU(s) list:   0-15
     Thread(s) per core:    1
     Core(s) per socket:    8
     Socket(s):             2
     NUMA node(s):          2
     Vendor ID:             GenuineIntel
     CPU family:            6
     Model:                 85
     Model name:            Intel(R) Xeon(R) Gold 6244 CPU @ 3.60GHz
     Stepping:              6
     CPU MHz:               3600.000
     CPU max MHz:           4400.0000
     CPU min MHz:           1200.0000
     BogoMIPS:              7200.00
     Virtualization:        VT-x
```

(Continued on next page)

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Platform Notes (Continued)

```
      L1d cache:             32K
      L1i cache:             32K
      L2 cache:              1024K
      L3 cache:              25344K
      NUMA node0 CPU(s):     0-7
      NUMA node1 CPU(s):     8-15
      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 cpuid
   aperfmperf 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 cpuid_fault epb cat_l3 cdp_l3
   invpcid_single intel_ppin ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi
   flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm
   cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd
   avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
   cqm_mbm_local dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req pku
   ospke avx512_vnni flush_l1d arch_capabilities

 /proc/cpuinfo 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
   node 0 size: 192180 MB
   node 0 free: 191847 MB
   node 1 cpus: 8 9 10 11 12 13 14 15
   node 1 size: 193509 MB
   node 1 free: 193090 MB
   node distances:
   node   0   1
     0:  10  18
     1:  18  10

 From /proc/meminfo
    MemTotal:       394947028 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 From /etc/*release* /etc/*version*
    os-release:
      NAME="SLES"
      VERSION="15"
      VERSION_ID="15"
      PRETTY_NAME="SUSE Linux Enterprise Server 15"
```

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Platform Notes (Continued)

```
      ID="sles"
      ID_LIKE="suse"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:15"

uname -a:
   Linux linux-dftw 4.12.14-25.28-default #1 SMP Wed Jan 16 20:00:47 UTC 2019 (dd6077c)
   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: Enhanced IBRS, IBPB: conditional, RSB
filling

run-level 3 May 9 10:16

SPEC is set to: /home/Benchmark/cascadelake_speccpu2017_speed_TEST
   Filesystem      Type   Size  Used Avail Use% Mounted on
   /dev/sda2       btrfs  238G   92G  145G  39% /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 FUJITSU V1.0.0.0 R1.3.3 for D3853-B1x            03/15/2019
  Memory:
   12x Micron 36ASF4G72PZ-2G9E2 32 GB 2 rank 2933
   4x Not Specified Not Specified

(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)
```

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Compiler Version Notes (Continued)

```
     641.leela_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.
-----------------------------------------------------------------------


=======================================================================
  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.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`

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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

http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2019-04-02.html
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-CSL-RevC.2019-04-30.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2019-04-02.xml
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-CSL-RevC.2019-04-30.xml

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

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