SPEC® CPU2017 Integer Speed Result

Cisco Systems

Cisco UCS C240 M5 (Intel Xeon Gold 6134 3.20 GHz)

$SPECspeed2017\_int\_base = 8.94$

$SPECspeed2017\_int\_peak = 9.20$

Threads

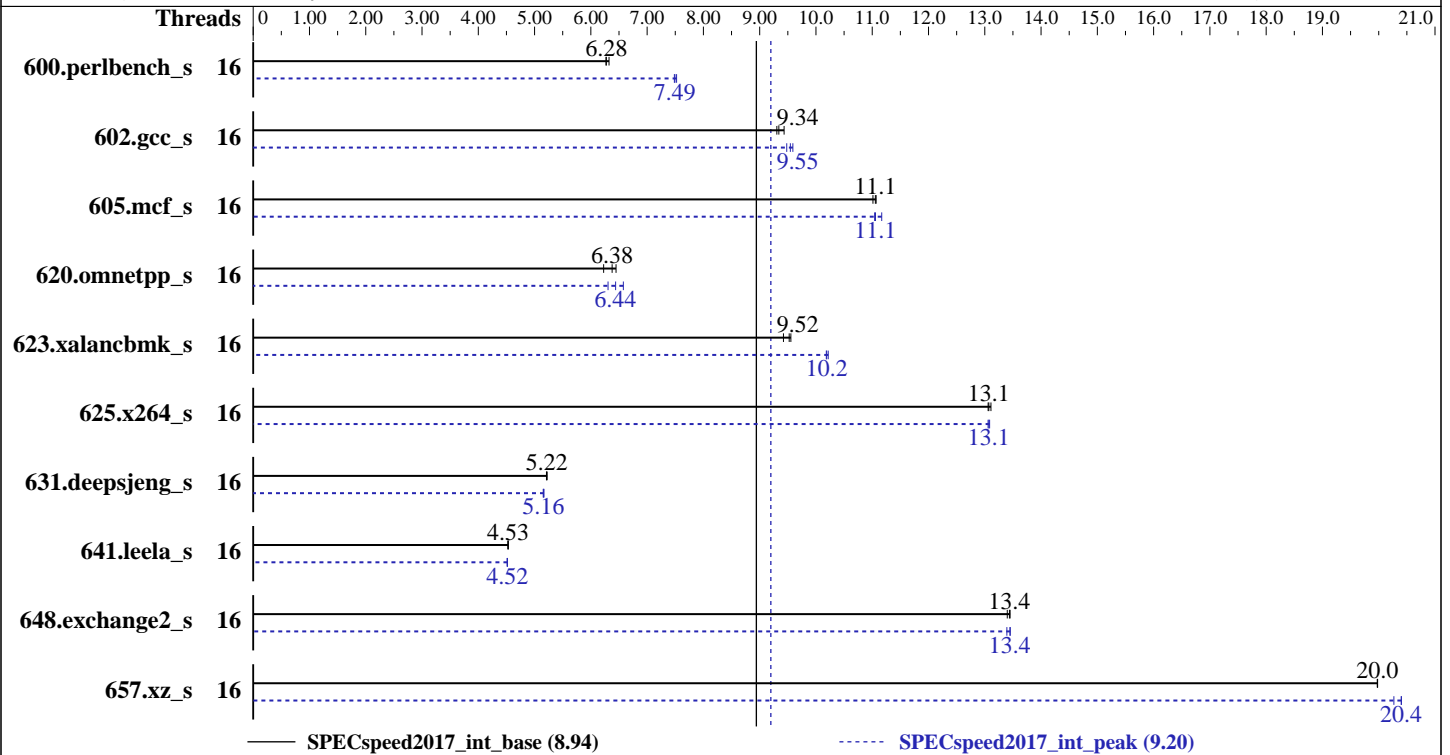| Benchmark	Threads	base	peak
600.perlbench_s	16	6.28	7.49
602.gcc_s	16	9.34	9.55
605.mcf_s	16	11.1	11.1
620.omnetpp_s	16	6.38	6.44
623.xalancbmk_s	16	9.52	10.2
625.x264_s	16	13.1	13.1
631.deepsjeng_s	16	5.22	5.16
641.leela_s	16	4.53	4.52
648.exchange2_s	16	13.4	13.4
657.xz_s	16	20.0	20.4

SPECspeed2017_int_base (8.94)   SPECspeed2017_int_peak (9.20)

Hardware

CPU Name: Intel Xeon Gold 6134
 Max MHz.: 3700
 Nominal: 3200
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: 768 GB (24 x 32 GB 2Rx4 PC4-2666V-R)
Storage: 1 x 400 GB SAS SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 12 SP2 (x86_64)
 4.4.120-92.70-default
Compiler: C/C++: Version 19.0.1.144 of Intel C/C++
 Compiler for Linux;
 Fortran: Version 19.0.1.144 of Intel Fortran
 Compiler for Linux
Parallel: Yes
Firmware: Version 4.0.1 released Oct-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

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CPU2017 License: 9019	**Test Date:** Nov-2018
Test Sponsor: Cisco Systems	**Hardware Availability:** Aug-2017
Tested by: Cisco Systems	**Software Availability:** Oct-2018

Results Table

	Base						**Peak**					
Benchmark	**Threads**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Threads**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
600.perlbench_s	16	**283**	**6.28**	281	6.32	283	6.27	16	236	7.52	237	7.48	**237**	**7.49**
602.gcc_s	16	**426**	**9.34**	422	9.43	428	9.31	16	420	9.48	**417**	**9.55**	415	9.59
605.mcf_s	16	429	11.0	427	11.1	**427**	**11.1**	16	428	11.0	423	11.2	**427**	**11.1**
620.omnetpp_s	16	262	6.23	**256**	**6.38**	253	6.45	16	**253**	**6.44**	248	6.58	259	6.31
623.xalancbmk_s	16	148	9.55	**149**	**9.52**	150	9.42	16	**139**	**10.2**	139	10.2	139	10.2
625.x264_s	16	**135**	**13.1**	135	13.1	135	13.1	16	135	13.1	135	13.1	**135**	**13.1**
631.deepsjeng_s	16	275	5.21	274	5.22	**275**	**5.22**	16	278	5.16	**278**	**5.16**	277	5.17
641.leela_s	16	377	4.53	**377**	**4.53**	377	4.53	16	**378**	**4.52**	378	4.51	378	4.52
648.exchange2_s	16	**219**	**13.4**	219	13.4	219	13.4	16	220	13.4	**219**	**13.4**	219	13.5
657.xz_s	16	309	20.0	309	20.0	**309**	**20.0**	16	303	20.4	305	20.3	**303**	**20.4**
SPECspeed2017_int_base =		**8.94**										
SPECspeed2017_int_peak =		**9.20**										

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/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/je5.0.1-64"
OMP_STACKSIZE = "192M"

 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
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
 sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases
```

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Test Sponsor: Cisco Systems
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Test Date: Nov-2018
Hardware Availability: Aug-2017
Software Availability: Oct-2018

Platform Notes

```
BIOS Settings:
Intel HyperThreading Technology set to Disabled
CPU performance set to Enterprise
Power Performance Tuning set to OS Controls
SNC set to Disabled
Patrol Scrub set to Disabled
 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
 running on linux-yoo1 Mon Nov 26 14:21:14 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)
       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 0 2 3 9 16 19 26 27
       physical 1: cores 0 1 2 3 10 11 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 6134 CPU @ 3.20GHz
      Stepping:             4
      CPU MHz:              3019.641
      CPU max MHz:          3700.0000
      CPU min MHz:          1200.0000
      BogoMIPS:             6385.02
      Virtualization:       VT-x
      L1d cache:            32K
      L1i cache:            32K
```

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Platform Notes (Continued)

```
      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
   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 hwp hwp_act_window hwp_epp hwp_pkg_req 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 : 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: 385626 MB
   node 0 free: 385192 MB
   node 1 cpus: 8 9 10 11 12 13 14 15
   node 1 size: 387054 MB
   node 1 free: 386670 MB
   node distances:
   node   0   1
     0:  10  21
     1:  21  10

 From /proc/meminfo
    MemTotal:       791225632 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 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"
```

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Platform Notes (Continued)

```
         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-yoo1 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 3 Nov 26 14:13

 SPEC is set to: /home/cpu2017
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda1       xfs   224G  116G  109G  52% /

 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 Cisco Systems, Inc. C240M5.4.0.1.139.1003182220 10/03/2018
   Memory:
    12x 0xCE00 M393A4K40BB2-CTD 32 GB 2 rank 2666
    12x 0xCE00 M393A4K40CB2-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,
     peak) 657.xz_s(base)
------------------------------------------------------------------------------
icc (ICC) 19.0.1.144 20181018
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
 CC   600.perlbench_s(peak) 602.gcc_s(peak) 605.mcf_s(peak) 657.xz_s(peak)
------------------------------------------------------------------------------
icc (ICC) 19.0.1.144 20181018
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


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

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org)   https://www.spec.org/

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CPU2017 License:	9019	**Test Date:**	Nov-2018
Test Sponsor:	Cisco Systems	**Hardware Availability:**	Aug-2017
Tested by:	Cisco Systems	**Software Availability:**	Oct-2018

Compiler Version Notes (Continued)

```
      641.leela_s(base)
-----------------------------------------------------------------------------
icpc (ICC) 19.0.1.144 20181018
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
-----------------------------------------------------------------------------


==============================================================================
CXXC 620.omnetpp_s(peak) 623.xalancbmk_s(peak) 631.deepsjeng_s(peak)
     641.leela_s(peak)
-----------------------------------------------------------------------------
icpc (ICC) 19.0.1.144 20181018
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
-----------------------------------------------------------------------------


==============================================================================
 FC  648.exchange2_s(base, peak)
-----------------------------------------------------------------------------
ifort (IFORT) 19.0.1.144 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`

(Continued on next page)

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Hardware Availability: Aug-2017
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Base Portability Flags (Continued)

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/home/cpu2017/je5.0.1-64/ -ljemalloc
```

C++ benchmarks:
```
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/home/cpu2017/je5.0.1-64/ -ljemalloc
```

Fortran benchmarks:
```
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/home/cpu2017/je5.0.1-64/ -ljemalloc
```

Peak Compiler Invocation

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

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

623.xalancbmk_s: `icpc -m32 -L/opt/intel/lib/ia32`

Fortran benchmarks:
`ifort -m64`

Peak 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: `-D_FILE_OFFSET_BITS=64 -DSPEC_LINUX`
625.x264_s: `-DSPEC_LP64`

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Peak Portability Flags (Continued)

631.deepsjeng_s: `-DSPEC_LP64`
641.leela_s: `-DSPEC_LP64`
648.exchange2_s: `-DSPEC_LP64`
657.xz_s: `-DSPEC_LP64`

Peak Optimization Flags

C benchmarks:

600.perlbench_s: `-Wl,-z,muldefs` `-prof-gen`(pass 1) `-prof-use`(pass 2) `-O2`
`-xCORE-AVX512` `-qopt-mem-layout-trans=3` `-ipo` `-O3`
`-no-prec-div` `-DSPEC_SUPPRESS_OPENMP` `-qopenmp`
`-DSPEC_OPENMP` `-fno-strict-overflow`
`-L/home/cpu2017/je5.0.1-64/` `-ljemalloc`

602.gcc_s: `-Wl,-z,muldefs` `-prof-gen`(pass 1) `-prof-use`(pass 2) `-O2`
`-xCORE-AVX512` `-qopt-mem-layout-trans=3` `-ipo` `-O3`
`-no-prec-div` `-DSPEC_SUPPRESS_OPENMP` `-qopenmp`
`-DSPEC_OPENMP` `-L/home/cpu2017/je5.0.1-64/` `-ljemalloc`

605.mcf_s: `-Wl,-z,muldefs` `-prof-gen`(pass 1) `-prof-use`(pass 2) `-ipo`
`-xCORE-AVX512` `-O3` `-no-prec-div` `-qopt-mem-layout-trans=3`
`-DSPEC_SUPPRESS_OPENMP` `-qopenmp` `-DSPEC_OPENMP`
`-L/home/cpu2017/je5.0.1-64/` `-ljemalloc`

625.x264_s: `-Wl,-z,muldefs` `-xCORE-AVX512` `-ipo` `-O3` `-no-prec-div`
`-qopt-mem-layout-trans=3` `-qopenmp` `-DSPEC_OPENMP`
`-L/home/cpu2017/je5.0.1-64/` `-ljemalloc`

657.xz_s: `Same as 602.gcc_s`

C++ benchmarks:

620.omnetpp_s: `-Wl,-z,muldefs` `-prof-gen`(pass 1) `-prof-use`(pass 2) `-ipo`
`-xCORE-AVX512` `-O3` `-no-prec-div` `-qopt-mem-layout-trans=3`
`-DSPEC_SUPPRESS_OPENMP` `-qopenmp` `-DSPEC_OPENMP`
`-L/home/cpu2017/je5.0.1-64/` `-ljemalloc`

623.xalancbmk_s: `-Wl,-z,muldefs` `-prof-gen`(pass 1) `-prof-use`(pass 2) `-ipo`
`-xCORE-AVX512` `-O3` `-no-prec-div` `-qopt-mem-layout-trans=3`
`-DSPEC_SUPPRESS_OPENMP` `-qopenmp` `-DSPEC_OPENMP`
`-L/home/cpu2017/je5.0.1-32/` `-ljemalloc`

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Cisco Systems

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Peak Optimization Flags (Continued)

631.deepsjeng_s: `Same as 620.omnetpp_s`

641.leela_s: `Same as 620.omnetpp_s`

Fortran benchmarks:
```
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/home/cpu2017/je5.0.1-64/ -ljemalloc
```

The flags files that were used to format this result can be browsed at
`http://www.spec.org/cpu2017/flags/Intel-ic19.0-official-linux64.html`
`http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V1.2-revH.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/Intel-ic19.0-official-linux64.xml`
`http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V1.2-revH.xml`

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

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