SPEC® CPU2017 Integer Speed Result

Cisco Systems

Cisco UCS C240 M5 (Intel Xeon Platinum 8153, 2.00 GHz)

$SPECspeed2017\_int\_base = 7.07$

$SPECspeed2017\_int\_peak = 7.27$

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

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

Threads

Benchmark	Threads	base	peak
600.perlbench_s	32	4.82	5.80
602.gcc_s	32	7.58	7.74
605.mcf_s	32	9.08	9.15
620.omnetpp_s	32	5.07	5.12
623.xalancbmk_s	32	7.39	7.85
625.x264_s	32	9.93	9.95
631.deepsjeng_s	32	4.10	4.05
641.leela_s	32	3.43	3.42
648.exchange2_s	32	10.1	10.2
657.xz_s	32	17.7	17.8

SPECspeed2017_int_base (7.07)   SPECspeed2017_int_peak (7.27)

Hardware

CPU Name: Intel Xeon Platinum 8153
 Max MHz.: 2800
 Nominal: 2000
Enabled: 32 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: 22 MB I+D on chip per chip
 Other: None
Memory: 768 GB (24 x 32 GB 2Rx4 PC4-2666V-R)
Storage: 1 x 600 GB SAS HDD,15K RPM
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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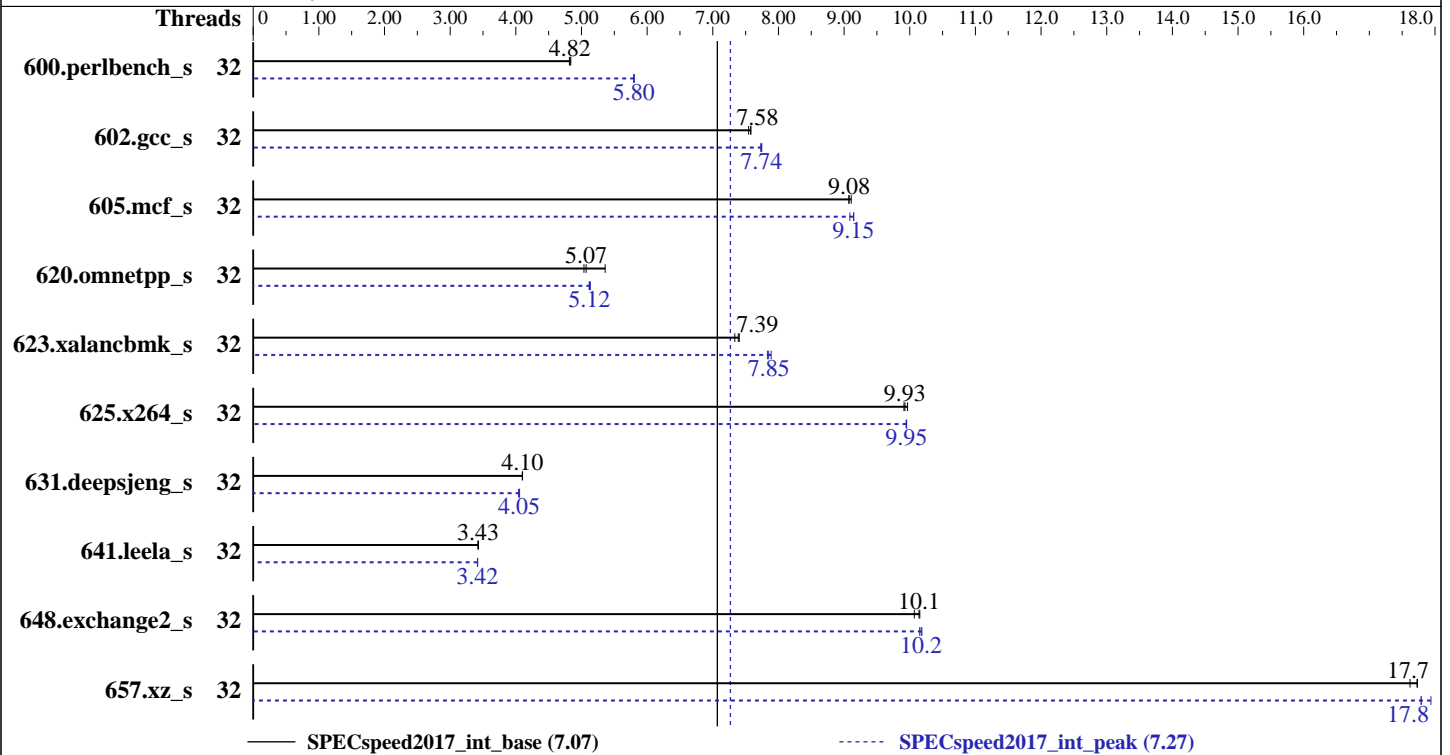**Test Sponsor:** Cisco Systems
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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	32	369	4.82	367	4.84	**368**	**4.82**	32	306	5.80	306	5.80	**306**	**5.80**
602.gcc_s	32	525	7.58	528	7.55	**526**	**7.58**	32	515	7.73	514	7.75	**514**	**7.74**
605.mcf_s	32	**520**	**9.08**	520	9.07	518	9.11	32	**516**	**9.15**	519	9.09	516	9.15
620.omnetpp_s	32	304	5.36	324	5.04	**322**	**5.07**	32	**319**	**5.12**	319	5.12	318	5.14
623.xalancbmk_s	32	**192**	**7.39**	191	7.40	193	7.34	32	**180**	**7.85**	181	7.83	180	7.89
625.x264_s	32	178	9.91	177	9.97	**178**	**9.93**	32	177	9.95	**177**	**9.95**	177	9.94
631.deepsjeng_s	32	**349**	**4.10**	349	4.10	350	4.10	32	**354**	**4.05**	354	4.04	353	4.06
641.leela_s	32	497	3.43	498	3.42	**498**	**3.43**	32	499	3.42	499	3.42	**499**	**3.42**
648.exchange2_s	32	290	10.2	**290**	**10.1**	292	10.1	32	289	10.2	**289**	**10.2**	290	10.2
657.xz_s	32	349	17.7	351	17.6	**349**	**17.7**	32	345	17.9	348	17.8	**347**	**17.8**

SPECspeed2017_int_base =	**7.07**
SPECspeed2017_int_peak =	**7.27**

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"
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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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-dkz7 Tue Nov 27 22:47:38 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
       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 : 16
       siblings  : 16
       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

 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:    1
    Core(s) per socket:    16
    Socket(s):             2
    NUMA node(s):          2
    Vendor ID:             GenuineIntel
    CPU family:            6
    Model:                 85
    Model name:            Intel(R) Xeon(R) Platinum 8153 CPU @ 2.00GHz
    Stepping:              4
    CPU MHz:               1110.080
    CPU max MHz:           2800.0000
    CPU min MHz:           1000.0000
    BogoMIPS:              3990.62
    Virtualization:        VT-x
    L1d cache:             32K
    L1i cache:             32K
```

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Platform Notes (Continued)

```
       L2 cache:              1024K
       L3 cache:              22528K
       NUMA node0 CPU(s):     0-15
       NUMA node1 CPU(s):     16-31
       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 : 22528 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 8 9 10 11 12 13 14 15
    node 0 size: 385626 MB
    node 0 free: 385133 MB
    node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
    node 1 size: 387054 MB
    node 1 free: 386593 MB
    node distances:
    node   0   1
      0:  10  21
      1:  21  10

  From /proc/meminfo
    MemTotal:       791225564 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-dkz7 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 27 22:45

 SPEC is set to: /home/cpu2017
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda2       xfs   500G  109G  392G  22% /

 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)

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

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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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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.

Tested with SPEC CPU2017 v1.0.2 on 2018-11-28 01:47:37-0500.
Report generated on 2018-12-26 13:04:17 by CPU2017 PDF formatter v6067.
Originally published on 2018-12-25.