---

## SPEC CPU®2017 Integer Speed Result

**Cisco Systems**

Cisco UCS C240 M6 (Intel Xeon Gold 5318S, 2.10GHz)

### Software

- **OS:** SUSE Linux Enterprise Server 15 SP2 5.3.18-22-default
- **Compiler:**
  - C/C++: Version 2021.1 of Intel oneAPI DPC++/C++ Compiler Build 20201113 for Linux;
  - Fortran: Version 2021.1 of Intel Fortran Compiler Classic Build 20201112 for Linux;
  - C/C++: Version 2021.1 of Intel C/C++ Compiler Classic Build 20201112 for Linux
- **Parallel:** Yes
- **Firmware:** Version 4.2.1d released Jul-2021
- **File System:** btrfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** jemalloc memory allocator V5.0.1
- **Power Management:** BIOS and OS set to prefer performance at the cost of additional power usage

### Hardware

- **CPU Name:** Intel Xeon Gold 5318S
- **Max MHz:** 3400
- **Nominal:** 2100
- **Enabled:** 48 cores, 2 chips
- **Orderable:** 1,2 Chips
- **Cache L1:** 32 KB I + 48 KB D on chip per core
- **L2:** 1.25 MB I+D on chip per core
- **L3:** 36 MB I+D on chip per core
- **Other:** None
- **Memory:** 2 TB (32 x 64 GB 2Rx4 PC4-3200AA-R, running at 2933)
- **Storage:** 1 x 480 GB SATA SSD
- **Other:** None

### CPU2017 License:

- **9019**

### Test Sponsor:

- **Cisco Systems**

### Tested by:

- **Cisco Systems**

### Test Date:

- **Sep-2021**

### Hardware Availability:

- **Jun-2021**

### Software Availability:

- **Dec-2020**

### TEST RESULTS

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
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<td>perlbench</td>
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**SPEC CPU®2017 Integer Speed Result**

Copyright 2017-2021 Standard Performance Evaluation Corporation

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Cisco Systems
Cisco UCS C240 M6 (Intel Xeon Gold 5318S, 2.10GHz)

SPEC CPU®2017 Integer Speed Result

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
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<td>275</td>
<td>22.5</td>
</tr>
</tbody>
</table>

SPECspeed®2017_int_base = 11.4
SPECspeed®2017_int_peak = 11.6

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"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"
MALLOCP_CONF = "retain:true"
OMP_STACKSIZE = "192M"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7940X CPU + 64GB RAM
memory using openSUSE Leap 15.2
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.:

(Continued on next page)
Cisco Systems
Cisco UCS C240 M6 (Intel Xeon Gold 5318S, 2.10GHz)  

<table>
<thead>
<tr>
<th>CPU2017 License: 9019</th>
<th>Test Date: Sep-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Cisco Systems</td>
<td>Hardware Availability: Jun-2021</td>
</tr>
<tr>
<td>Tested by: Cisco Systems</td>
<td>Software Availability: Dec-2020</td>
</tr>
</tbody>
</table>

**General Notes (Continued)**

numactl --interleave=all runcpu <etc>

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.


**Platform Notes**

BIOS Settings:
Intel Hyper-Threading Technology set to Disabled
DCU Streamer Prefetch set to Disabled
LLC Dead Line set to Disabled
Memory Refresh Rate set to 1x Refresh
ADDDC Sparing set to Disabled
Patrol Scrub set to Disabled
Enhanced CPU performance set to Auto
Processor C6 Report set to Enabled

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
running on install Sun Sep 5 13:25:22 2021

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 5318S CPU @ 2.10GHz
  2 "physical id"s (chips)
  48 "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 : 24
  siblings : 24
  physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
  physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
```

From lscpu from util-linux 2.33.1:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian

(Continued on next page)
**Cisco Systems**

Cisco UCS C240 M6 (Intel Xeon Gold 5318S, 2.10GHz)  

**SPEC CPU®2017 Integer Speed Result**

<table>
<thead>
<tr>
<th>CPU2017 License: 9019</th>
<th>CPU family: 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Cisco Systems</td>
<td>Model: 106</td>
</tr>
<tr>
<td>Tested by: Cisco Systems</td>
<td>Model name: Intel(R) Xeon(R) Gold 5318S CPU @ 2.10GHz</td>
</tr>
</tbody>
</table>

**SPECspeed®2017_int_base = 11.4**

<table>
<thead>
<tr>
<th>Test Date: Sep-2021</th>
<th>Vendor ID: GenuineIntel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability: Jun-2021</td>
<td>CPU MHz: 3020.048</td>
</tr>
<tr>
<td>Software Availability: Dec-2020</td>
<td>CPU max MHz: 3400.0000</td>
</tr>
</tbody>
</table>

**Platform Notes (Continued)**

Address sizes: 46 bits physical, 57 bits virtual

CPU(s): 48

On-line CPU(s) list: 0-47

Thread(s) per core: 1

Core(s) per socket: 24

Socket(s): 2

NUMA node(s): 2

Thread(s) per core: 1

Core(s) per socket: 24

Socket(s): 2

NUMA node(s): 2

Vendor ID: GenuineIntel

CPU family: 6

Model: 106

Model name: Intel(R) Xeon(R) Gold 5318S CPU @ 2.10GHz

Stepping: 6

CPU MHz: 3020.048

CPU max MHz: 3400.0000

CPU min MHz: 800.0000

BogoMIPS: 4200.00

Virtualization: VT-x

L1d cache: 48K

L2 cache: 1280K

L3 cache: 36864K

NUMA node0 CPU(s): 0-23

NUMA node1 CPU(s): 24-47

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 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 tdie tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_13 invpcid_single ssbd mba ibrs ibpb ibrs_enhanced tpr_shadow vmni flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 ersed invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl xsaveopt xsavec xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local wbinvd dtherm ida arat pln pts hwcap act_window hwp_epp hwp_pkg_req avx512vbmi umip pku opske avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_vbitalg tme avx512_vpopcntdq la57 rdpid md_clear pconfig flush_l1d arch_capabilities

#endif

/cache/data

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 16 17 18 19 20 21 22 23

node 0 size: 1031744 MB

node 0 free: 1031094 MB

(Continued on next page)
## SPEC CPU®2017 Integer Speed Result

### Cisco Systems

**Cisco UCS C240 M6 (Intel Xeon Gold 5318S, 2.10GHz)**

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
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<tbody>
<tr>
<td>11.4</td>
<td>11.6</td>
</tr>
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</table>

**CPU2017 License:** 9019  
**Test Sponsor:** Cisco Systems  
**Tested by:** Cisco Systems  
**Test Date:** Sep-2021  
**Hardware Availability:** Jun-2021  
**Software Availability:** Dec-2020

### Platform Notes (Continued)

```
node 1 cpus: 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
node 1 size: 1032182 MB
node 1 free: 1031601 MB
node distances:
  node  0  1
  0:  10  20
  1:  20  10

From /proc/meminfo
  MemTotal:       2113461200 kB
  HugePages_Total:       0
  Hugepagesize:       2048 kB

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance

From /etc/*release* /etc/*version*
  os-release:
    NAME="SLES"
    VERSION="15-SP2"
    VERSION_ID="15.2"
    PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
    ID="sles"
    ID_LIKE="suse"
    ANSI_COLOR="0;32"
    CPE_NAME="cpe:/o:suse:sles:15:sp2"

uname -a:
  Linux install 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020 (720aeba) x86_64
  x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit): Not affected
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swaps barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected
```
Cisco Systems

Cisco UCS C240 M6 (Intel Xeon Gold 5318S, 2.10GHz)

SPEC CPU®2017 Integer Speed Result
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CPU2017 License: 9019
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SPECspeed®2017_int_base = 11.4
SPECspeed®2017_int_peak = 11.6

Test Date: Sep-2021
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Platform Notes (Continued)

run-level 3 Sep 5 13:24

SPEC is set to: /home/cpu2017

Filesystem     Type   Size  Used Avail Use% Mounted on
/dev/sdc2      btrfs  277G   26G  248G  10% /home

From /sys/devices/virtual/dmi/id
Vendor:         Cisco Systems Inc
Product:        UCSC-C240-M6SX
Serial:         WZP244208SJ

Additional information from dmidecode 3.2 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.
Memory:
32x 0xCE00 M393A8G40AB2-CWE 64 GB 2 rank 3200, configured at 2933

BIOS:
BIOS Vendor:   Cisco Systems, Inc.
BIOS Version:  C240M6.4.2.1d.0.0730210924
BIOS Date:     07/30/2021
BIOS Revision: 5.22

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C       | 600.perlbench_s(peak)
==============================================================================
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================

==============================================================================
C       | 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak)
   | 625.x264_s(base, peak) 657.xz_s(base, peak)
==============================================================================
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================

(Continued on next page)
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Cisco UCS C240 M6 (Intel Xeon Gold 5318S, 2.10GHz)

| SPECspeed®2017_int_base = 11.4 |
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**Compiler Version Notes (Continued)**

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</tr>
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<tr>
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<th>648.exchange2_s(base, peak)</th>
</tr>
</thead>
</table>
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Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |

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**Base Compiler Invocation**

- **C benchmarks:**
  - icx

- **C++ benchmarks:**
  - icpx

- **Fortran benchmarks:**
  - ifort
# SPEC CPU®2017 Integer Speed Result

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Cisco UCS C240 M6 (Intel Xeon Gold 5318S, 2.10GHz)

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**Test Sponsor:** Cisco Systems  
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### Base Portability Flags

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<tr>
<th>Benchmark</th>
<th>Flags</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>-DSPEC_LP64 -DSPEC_LINUX_X64</td>
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<tr>
<td>602.gcc_s</td>
<td>-DSPEC_LP64</td>
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<tr>
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<td>-DSPEC_LP64 -DSPEC_LINUX</td>
</tr>
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<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>-DSPEC_LP64</td>
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</table>

### Base Optimization Flags

**C benchmarks:**

-DSPEC_OPENMP -std=c11 -m64 -fiopenmp -Wl,-z,muldefs -xCORE-AVX512  
-O3 -ffast-math -flto -mfpmath=sse -funroll-loops  
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries  
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

**C++ benchmarks:**

-DSPEC_OPENMP -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math  
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-mbranches-within-32B-boundaries  
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin/  
-lqkmalloc

**Fortran benchmarks:**

-m64 -xCORE-AVX512 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4  
-nostandard-realloc-lhs -align array32byte -auto  
-mbranches-within-32B-boundaries

### Peak Compiler Invocation

**C benchmarks (except as noted below):**

icx

600.perlbench_s: icc

**C++ benchmarks:**

icpx

(Continued on next page)
Cisco Systems
Cisco UCS C240 M6 (Intel Xeon Gold 5318S, 2.10GHz)

SPECspeed®2017_int_base = 11.4
SPECspeed®2017_int_peak = 11.6

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

Test Date: Sep-2021
Hardware Availability: Jun-2021
Software Availability: Dec-2020

Peak Compiler Invocation (Continued)

Fortran benchmarks:
ifort

Peak Portability Flags
Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

600.perlbench_s:-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)
-xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -fno-strict-overflow
-mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

602.gcc_s:-m64 -std=c11 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX512 -flto
-Ofast(pass 1) -O3 -ffast-math -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

605.mcf_s:basepeak = yes

625.x264_s:-DSPEC_OPENMP -fiopenmp -std=c11 -m64 -Wl,-z,muldefs
-xCORE-AVX512 -flto -O3 -ffast-math
-qopt-mem-layout-trans=4 -fno-alias
-mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

657.xz_s:basepeak = yes

C++ benchmarks:

620.omnetpp_s:basepeak = yes

623.xalancbmk_s:basepeak = yes

631.deepsjeng_s:basepeak = yes

(Continued on next page)
## Cisco Systems

Cisco UCS C240 M6 (Intel Xeon Gold 5318S, 2.10GHz)

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### CPU2017 License: 9019

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### Peak Optimization Flags (Continued)

- 641.leela_s: basepeak = yes
- Fortran benchmarks:
  - 648.exchange2_s: basepeak = yes

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


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


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