# SPEC CPU®2017 Integer Rate Result

## Cisco Systems

Cisco UCS B200 M5 (Intel Xeon Gold 6240L, 2.60GHz)

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>Aug-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Apr-2019</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>May-2019</td>
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</table>

### CPU2017 License:
9019

### Test Sponsor:
Cisco Systems

### Tested by:
Cisco Systems

### Software

**OS:**
SUSE Linux Enterprise Server 15 (x86_64)
4.12.14-23-default

**Compiler:**
C/C++: Version 19.0.4.227 of Intel C/C++ Compiler for Linux;
Fortran: Version 19.0.4.227 of Intel Fortran Compiler for Linux

**Firmware:**
Version 4.0.4b released Apr-2019

**File System:**
xfs

**System State:**
Run level 3 (multi-user)

**Base Pointers:**
64-bit

**Peak Pointers:**
Not Applicable

**Other:**
None

**Power Management:**
--

### Hardware

**CPU Name:**
Intel Xeon Gold 6240L

**Max MHz:**
3900

**Nominal:**
2600

**Enabled:**
36 cores, 2 chips, 2 threads/core

**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 PC4-2933V-R)

**Storage:**
1 x 1.9 TB SSD SAS

**Other:**
None

### Copies

<table>
<thead>
<tr>
<th>Spec.Name</th>
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<tbody>
<tr>
<td>500.perlbench_r</td>
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<tr>
<td>502.gcc_r</td>
<td>72</td>
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<td>505.mcf_r</td>
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<td>72</td>
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### SPECrate®2017 int_base

222

### SPECrate®2017 int_peak

Not Run
Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 6240L, 2.60GHz)

SPEC CPU®2017 Integer Rate Result
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SPECrate®2017_int_base = 222
SPECrate®2017_int_peak = Not Run

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Results Table

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<td>146</td>
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</tbody>
</table>

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"

General Notes
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/lib/ia32:/home/cpu2017/je5.0.1-32"

Binaries compiled on a system with 1x Intel Core i9-799X 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
runcpu command invoked through numactl i.e.:
    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)

(Continued on next page)
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Cisco Systems

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SPECrate®2017_int_base = 222
SPECrate®2017_int_peak = Not Run

General Notes (Continued)

is mitigated in the system as tested and documented.

Platform Notes

BIOS Settings:
Intel HyperThreading Technology set to Enabled
SNC set to Enabled
Power Performance Tuning set to OS Controls
Patrol Scrub set to Disabled
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on linux-pmqx Fri Sep 6 16:03:39 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 6240L CPU @ 2.60GHz
  2 "physical id"s (chips)
  72 "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 : 18
  siblings : 36
  physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27

From lscpu:
  Architecture: x86_64
  CPU op-mode(s): 32-bit, 64-bit
  Byte Order: Little Endian
  CPU(s): 72
  On-line CPU(s) list: 0-71
  Thread(s) per core: 2
  Core(s) per socket: 18
  Socket(s): 2
  NUMA node(s): 4
  Vendor ID: GenuineIntel
  CPU family: 6
  Model: 85
  Model name: Intel(R) Xeon(R) Gold 6240L CPU @ 2.60GHz
  Stepping: 7
  CPU MHz: 2600.000
  CPU max MHz: 3900.0000
  CPU min MHz: 1000.0000

(Continued on next page)
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**Platform Notes (Continued)**

- **BogoMIPS:** 5200.00  
- **Virtualization:** VT-x  
- **L1d cache:** 32K  
- **L1i cache:** 32K  
- **L2 cache:** 1024K  
- **L3 cache:** 25344K  
- **NUMA node0 CPU(s):** 0-2, 5, 6, 9, 10, 14, 15, 36-38, 41, 42, 45, 46, 50, 51  
- **NUMA node1 CPU(s):** 3, 4, 7, 8, 11-13, 16, 17, 39, 40, 43, 44, 47-49, 52, 53  
- **NUMA node2 CPU(s):** 18-20, 23, 24, 27, 28, 32, 33, 54-56, 59, 60, 63, 64, 68, 69  
- **NUMA node3 CPU(s):** 21, 22, 25, 26, 29-31, 34, 35, 57, 58, 61, 62, 65-67, 70, 71  
- **Flags:** fpu vme de pse tsc msr mce 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 tsc_known_freq 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_ppnin mba tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm OCCUP llc cqm_mbmr_total cqm_mbmr_local ibpb ibrs stibp dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req pku ospke avx512_vnni arch_capabilities ssbd

/pro/cpuintinfo cache data  
        cache size : 25344 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.  
**Available:** 4 nodes (0-3)  
**Node 0 cpus:** 0 1 2 5 6 9 10 14 15 36 37 38 41 42 45 46 50 51  
**Node 0 size:** 192062 MB  
**Node 0 free:** 191766 MB  
**Node 1 cpus:** 3 4 7 8 11 12 13 16 17 39 40 43 44 47 48 49 52 53  
**Node 1 size:** 193522 MB  
**Node 1 free:** 193229 MB  
**Node 2 cpus:** 18 19 20 23 24 27 28 32 33 54 55 56 59 60 63 64 68 69  
**Node 2 size:** 193522 MB  
**Node 2 free:** 193270 MB  
**Node 3 cpus:** 21 22 25 26 29 30 31 34 35 37 58 61 62 65 66 67 70 71  
**Node 3 size:** 193519 MB  
**Node 3 free:** 193270 MB  
**Node distances:**

<table>
<thead>
<tr>
<th>Node</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<tbody>
<tr>
<td>0</td>
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(Continued on next page)
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Platform Notes (Continued)

From /proc/meminfo
MemTotal:       791169176 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"
    ID="sles"
    ID_LIKE="suse"
    ANSI_COLOR="0;32"
    CPE_NAME="cpe:/o:suse:sles:15"

uname -a:
  Linux linux-pmqx 4.12.14-23-default #1 SMP Tue May 29 21:04:44 UTC 2018 (cd0437b)
  x86_64 x86_64 x86_64 GNU/Linux
run-level 3 Sep 6 16:02

SPEC is set to: /home/cpu2017

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. B200M5.4.0.4b.0.0407191258 04/07/2019
  Memory:
    24x 0xCE00 M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2934

(End of data from sysinfo program)

Compiler Version Notes
==============================================================================
<table>
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<tr>
<th>C</th>
<th>500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)</th>
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==============================================================================

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

(Continued on next page)
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Compiler Version Notes (Continued)

------------------------------------------------------------------------------
C++  | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
     | 541.leela_r(base)
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
Fortran | 548.exchange2_r(base)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 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

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -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`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64`
- `-lqkmalloc`

**C++ benchmarks:**
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=4`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64`
- `-lqkmalloc`

**Fortran benchmarks:**
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64`
- `-lqkmalloc`

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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