Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 6238L, 2.10GHz)

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<tr>
<th>Copies</th>
<th>SPECrate®2017_int_base = 246</th>
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<tr>
<td>500.perlbench_r 88</td>
<td>188</td>
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<tr>
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<td>505</td>
</tr>
<tr>
<td>557.xz_r 88</td>
<td>165</td>
</tr>
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</table>

**Hardware**
- CPU Name: Intel Xeon Gold 6238L
- Max MHz: 3700
- Nominal: 2100
- Enabled: 44 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: 30.25 MB I+D on chip per chip
- Memory: 768 GB (24 x 32 GB 2R4 PC4-2933V-R)
- Storage: 1 x 960 GB M.2 SATA SSD
- Other: None

**Software**
- OS: SUSE Linux Enterprise Server 15 (x86_64)
- 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
- Parallel: No
- Compiler: Version 4.0.4b released Apr-2019
- Firmware: Version 4.0.4b released Apr-2019
- File System: xfs
- System State: Run level 3 (multi-user)
- Base Pointers: 64-bit
- Other: None
- Power Management: --
## SPEC CPU®2017 Integer Rate Result

**Cisco Systems**
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<table>
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<th>9019</th>
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<th>Aug-2019</th>
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<td>Cisco Systems</td>
<td>Software Availability:</td>
<td>May-2019</td>
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**SPECrate®2017_int_base = 246**
**SPECrate®2017_int_peak = Not Run**

### Results Table

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</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 numaclt 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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**General Notes (Continued)**

is mitigated in the system as tested and documented.

### Platform Notes

**BIOS Settings:**
- Intel HyperThreading Technology set to Enabled
- CPU performance set to Enterprise
- Power Performance Tuning set to OS Controls
- SNC set to Enabled
- IMC Interleaving set to 1-way Interleave
- Patrol Scrub set to Disabled

**Sysinfo program /home/cpu2017/bin/sysinfo**
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618b0c091c0f
running on linux-klic6 Wed Sep 4 22:11:32 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 6238L CPU @ 2.10GHz
- 2 "physical id"s (chips)
- 88 "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: 22
  - siblings: 44
  - physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27 28
  - physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27 28

From lscpu:
- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit
- Byte Order: Little Endian
- CPU(s): 88
- On-line CPU(s) list: 0-87
- Thread(s) per core: 2
- Core(s) per socket: 22
- Socket(s): 2
- NUMA node(s): 4
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 85
- Model name: Intel(R) Xeon(R) Gold 6238L CPU @ 2.10GHz
- Stepping: 7
- CPU MHz: 2100.000

(Continued on next page)
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CPU2017 License: 9019
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Tested by: Cisco Systems
Test Date: Aug-2019
Hardware Availability: Apr-2019
Software Availability: May-2019

Platform Notes (Continued)

CPU max MHz: 3700.0000
CPU min MHz: 1000.0000
Bogomips: 4200.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 30976K
NUMA node0 CPU(s): 0-2,6-8,11-13,17,18,44-46,50-52,55-57,61,62
NUMA node1 CPU(s): 3-5,9,10,14-16,19-21,47-49,53,54,58-60,63-65
NUMA node2 CPU(s): 22-24,28-30,33-35,39,40,66-68,72-74,77-79,83,84
NUMA node3 CPU(s): 25-27,31,32,36-38,41-43,69-71,75,76,80-82,85-87
Flags: fpu vme de pse tsc msr pae 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_ppip mba tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bm1 hle avx2 smep bmi2 erva invpcid rtm cqm mpx rdt_a avx512f avx512dq rdseed adx smap c flushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xasave xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local ibpb ibrs stibp dtherm ida arat plts hwp hwp_act_window hwp_epp hwp_pkg_req pk u ospke avx512_vnni arch_capabilities ssbd

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.

node 0 cpus: 0 1 2 6 7 8 11 12 13 17 18 44 45 46 50 51 52 55 56 57 61 62
node 0 size: 191902 MB
node 0 free: 191584 MB
node 1 cpus: 3 4 5 9 10 14 15 16 19 20 21 47 48 49 53 54 58 59 60 63 64 65
node 1 size: 193521 MB
node 1 free: 193274 MB
node 2 cpus: 22 23 24 28 29 30 33 34 35 39 40 66 67 68 72 73 74 77 78 79 83 84
node 2 size: 193521 MB
node 2 free: 193230 MB
node 3 cpus: 25 26 27 31 32 36 37 38 41 42 43 69 70 71 75 76 80 81 82 85 86 87
node 3 size: 193518 MB
node 3 free: 193278 MB
node distances:
node 0: 10 11 21 21
node 1: 11 10 21 21

(Continued on next page)
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SPECrater®2017_int_base = 246
SPECrater®2017_int_peak = Not Run

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

Platform Notes (Continued)

2: 21 21 10 11
3: 21 21 11 10

From /proc/meminfo
MemTotal: 791003052 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-k1c6 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 4 21:46

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sdc2 btrfs 557G 15G 542G 3% /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 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

==============================================================================
C | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)
   | 525.x264_r(base) 557.xz_r(base)
==============================================================================

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
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### Compiler Version Notes (Continued)

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

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

**Compiler Version Notes (Continued)**

```plaintext
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

-----------------------------
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:**
```plaintext
icc -m64 -std=c11
```

**C++ benchmarks:**
```plaintext
icpc -m64
```

**Fortran benchmarks:**
```plaintext
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
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
```

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### Base Portability Flags (Continued)

557.xz_r: -DSPEC_LP64

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

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