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

SPEC®2017_int_base = 246
SPEC®2017_int_peak = Not Run

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems
Test Date: Aug-2019
Hardware Availability: Apr-2019
Software Availability: May-2019

Cycles SPEC®2017_int_base (246)

500.perlbench_r 88
502.gcc_r 88
505.mcf_r 88
520.omnetpp_r 88
523.xalancbmk_r 88
525.x264_r 88
531.deepsjeng_r 88
541.leela_r 88
548.exchange2_r 88
557.xz_r 88

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
Cache L2: 1 MB I+D on chip per core
Cache L3: 30.25 MB I+D on chip per chip
Other: None
Memory: 768 GB (24 x 32 GB 2Rx4 PC4-2933V-R)
Storage: 1 x 600G SAS 10K RPM
Other: None

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
Parallel: No
Firmware: Version 4.0.4b released Apr-2019
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: --
**SPEC CPU®2017 Integer Rate Result**

**Cisco Systems**

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<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>9019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Cisco Systems</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Cisco Systems</td>
</tr>
</tbody>
</table>

**Results Table**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>188</td>
<td>746</td>
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<td>749</td>
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<tr>
<td>502.gcc_r</td>
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<td>628</td>
<td>198</td>
<td>640</td>
<td>195</td>
<td>632</td>
<td>197</td>
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<tr>
<td>505.mcf_r</td>
<td>88</td>
<td>454</td>
<td>313</td>
<td>453</td>
<td>314</td>
<td>455</td>
<td>313</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>88</td>
<td>707</td>
<td>163</td>
<td>706</td>
<td>163</td>
<td>706</td>
<td>164</td>
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<td>523.xalancbmk_r</td>
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<td>356</td>
<td>261</td>
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<td>261</td>
<td>356</td>
<td>261</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>88</td>
<td>310</td>
<td>497</td>
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<td>498</td>
<td>309</td>
<td>498</td>
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<tr>
<td>531.deepsjeng_r</td>
<td>88</td>
<td>492</td>
<td>205</td>
<td>490</td>
<td>206</td>
<td>489</td>
<td>206</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>88</td>
<td>766</td>
<td>190</td>
<td>757</td>
<td>193</td>
<td>761</td>
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<tr>
<td>548.exchange2_r</td>
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<td>457</td>
<td>505</td>
<td>457</td>
<td>505</td>
<td>456</td>
<td>505</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>88</td>
<td>575</td>
<td>165</td>
<td>576</td>
<td>165</td>
<td>575</td>
<td>165</td>
</tr>
</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 i9-7900X 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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Test Date: Aug-2019  
Hardware Availability: Apr-2019  
Software Availability: May-2019

SPECRate®2017_int_base = 246
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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 96c45e4568ad54c135fd618bccc091c0f
running on linux-k1c6 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)
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 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 cpuid
                     aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3
                     sdbg fma cx16 xtpre pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt
                     tsuid deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault
                     epb cat_l3 cdp_l3 invpcid_single intel_ppin mba tpr_shadow vnumi fpxprec ept
                     tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault
                     epb cat_l3 cdp_l3 invpcid_single intel_ppin mba tpr_shadow vnumi fpxprec ept
                     txpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 ibrms invpcid rtm cqm mpx rdt_a
                     avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl
                     xsaveopt xsavec xsavec_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
                     ibpb ibrs stibp dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req pkup
                     ospke avx512_vnni arch_capabilities ssbd

/proc/cpuinfo cache data
    cache size : 30976 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 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 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 1 2 3
      0: 11 11 21 21
      1: 11 10 21 21
(Continued on next page)
Cisco Systems
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SPECrate®2017_int_base = 246
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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,

(Continued on next page)
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CPU2017 License: 9019
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Compiler Version Notes (Continued)
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:
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
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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