Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 6242R, 3.10GHz)

SPECspeed®2017_int_base = 10.8
SPECspeed®2017_int_peak = 11.1

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
Parallel: Yes
Firmware: Version 4.0.4b released Apr-2019
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 set to prefer performance at the cost of additional power usage

Hardware
CPU Name: Intel Xeon Gold 6242R
Max MHz: 4100
Nominal: 3100
Enabled: 40 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: 35.75 MB I+D on chip per chip
Other: None
Memory: 768 GB (24 x 32 GB 2Rx4 PC4-2933V-R)
Storage: 1 x 240 GB SSD SAS
Other: None

Test Date: Apr-2020
Hardware Availability: Feb-2020
Software Availability: May-2019

Threads

600.perlbench_s  40
8.34  10.3

602.gcc_s  40
10.7  13.2

605.mcf_s  40
9.23  13.2

620.omnetpp_s  40
9.71  13.0

623.xalancbmk_s  40
13.0  14.8

625.x264_s  40
5.73  14.8

631.deepsjeng_s  40
8.74  17.6

641.leela_s  40
5.03  17.6

648.exchange2_s  40
5.03  24.4

657.xz_s  40
5.74  24.6

--- SPECspeed®2017_int_base (10.8) ---
--- SPECspeed®2017_int_peak (11.1) ---
## SPEC CPU®2017 Integer Speed Result

### Cisco Systems

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### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tr>
<td>600.perlbench_s</td>
<td>40</td>
<td>248</td>
<td>7.16</td>
<td>248</td>
<td>7.16</td>
<td>248</td>
<td>7.17</td>
<td>40</td>
<td>213</td>
<td>8.34</td>
<td></td>
<td>212</td>
<td>8.37</td>
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<td><strong>10.3</strong></td>
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<td>371</td>
<td>10.7</td>
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<td>375</td>
<td>10.6</td>
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<td>605.mcf_s</td>
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<td><strong>13.2</strong></td>
<td>358</td>
<td>13.2</td>
<td>360</td>
<td>13.1</td>
<td>40</td>
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<td>13.2</td>
<td></td>
<td><strong>358</strong></td>
<td><strong>13.2</strong></td>
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<td>623.xalanchmk_s</td>
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<td><strong>109</strong></td>
<td><strong>13.0</strong></td>
<td>108</td>
<td>13.1</td>
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<td>13.0</td>
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<tr>
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<td></td>
<td>119</td>
<td>14.8</td>
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<tr>
<td>631.deepsjeng_s</td>
<td>40</td>
<td><strong>250</strong></td>
<td><strong>5.73</strong></td>
<td>250</td>
<td>5.74</td>
<td>250</td>
<td>5.72</td>
<td>40</td>
<td>250</td>
<td>5.74</td>
<td></td>
<td><strong>250</strong></td>
<td><strong>5.74</strong></td>
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<tr>
<td>641.leela_s</td>
<td>40</td>
<td>339</td>
<td>5.03</td>
<td><strong>339</strong></td>
<td><strong>5.03</strong></td>
<td>340</td>
<td>5.02</td>
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<td>5.03</td>
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<td><strong>339</strong></td>
<td><strong>5.03</strong></td>
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<td>648.exchange2_s</td>
<td>40</td>
<td>167</td>
<td>17.6</td>
<td>167</td>
<td>17.5</td>
<td>167</td>
<td>17.6</td>
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<td>167</td>
<td>17.5</td>
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<td>253</td>
<td>24.4</td>
<td>252</td>
<td>24.5</td>
<td><strong>253</strong></td>
<td><strong>24.4</strong></td>
<td>40</td>
<td>251</td>
<td>24.6</td>
<td></td>
<td>251</td>
<td>24.6</td>
</tr>
</tbody>
</table>

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"

### 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"
- OMP_STACKSIZE = "192M"

### General Notes

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:
```sh
clear; sync; echo 3> /proc/sys/vm/drop_caches
```
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 HyperThreading Technology set to Disabled
CPU performance set to Enterprise
SNC set to Disabled
Patrol Scrub set to Disabled

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7ed0e6e46e485a0011
running on linux-5vrl Sun Apr 12 14:59:44 2020

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 6242R CPU @ 3.10GHz
  2 "physical id"s (chips)
  40 "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 : 20
siblings : 20
physical 0: cores 0 1 2 3 5 6 10 11 12 13 16 17 18 19 21 24 26 27 28 29
physical 1: cores 0 1 2 3 5 6 9 10 12 13 16 17 18 19 20 21 26 27 28 29

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 40
On-line CPU(s) list: 0-39
Thread(s) per core: 1
Core(s) per socket: 20
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6242R CPU @ 3.10GHz
Stepping: 7
CPU MHz: 3100.000
CPU max MHz: 4100.0000
CPU min MHz: 1200.0000
BogoMIPS: 6200.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K

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

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Test Date: Apr-2020
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Platform Notes (Continued)

L2 cache: 1024K
L3 cache: 36608K
NUMA node0 CPU(s): 0-19
NUMA node1 CPU(s): 20-39
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
aperfmpref tsc_known_freq pni pclmulqdq dtc64 monitor ds_cpl vmx smx est tm2 ssse3
sdmb fma cx16 xtrr 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_13 cd_p13 invpcid_single intel_ppt mba tpr_shadow vmni flexpriority ept
vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erness invpcid rtm cqm mpx rdt_a
avx512f avx512dq rdseed avx xsaveopt xsavec xsaveopt cqm_llc cqm_occup_llc cqm_mbm_total
cqm_mbm_local ibpb ibrs stibp dtmher ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req
pku ospke avx512_vnni arch_capabilities ssbd

/proc/cpuinfo cache data
  cache size: 36608 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 16 17 18 19
  node 0 size: 385616 MB
  node 0 free: 385147 MB
  node 1 cpus: 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39
  node 1 size: 387015 MB
  node 1 free: 386459 MB
  node distances:
    node 0 1
    0: 10 21
    1: 21 10

From /proc/meminfo
  MemTotal: 791175616 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"

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Cisco Systems
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**SPEC CPU®2017 Integer Speed Result**

**SPECspeed®2017_int_base = 10.8**

**SPECspeed®2017_int_peak = 11.1**

**Platform Notes (Continued)**

```bash
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15"
uname -a:
    Linux linux-5vrl 4.12.14-23-default #1 SMP Tue May 29 21:04:44 UTC 2018 (cd0437b)
x86_64 x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

- CVE-2018-3620 (L1 Terminal Fault): No status reported
- Microarchitectural Data Sampling: No status reported
- 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: __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted Speculation, IBPB, IBRS_FW

```
runtime 3 Apr 12 14:48
SPEC is set to: /home/cpu2017
    Filesystem Type  Size  Used  Avail  Use% Mounted on
    /dev/sdb1      btrfs 224G  31G  193G  14%  /home
```

Additional information from dmi_decode 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:
    24x 0xCE00 M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2934
```

(End of data from sysinfo program)

**Compiler Version Notes**

```
==============================================================================
| C       | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(base, peak) |
==============================================================================
```

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 6242R, 3.10GHz)

SPEC®2017_int_base = 10.8
SPEC®2017_int_peak = 11.1

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

Compiler Version Notes (Continued)

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

------------------------------------------------------------------------------
| C++     | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak)   |
|         | 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)     |
------------------------------------------------------------------------------

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 | 648.exchange2_s(base, peak) |
------------------------------------------------------------------------------

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

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

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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=4 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

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:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs

Peak Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Peak Portability Flags

Same as Base Portability Flags
Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 6242R, 3.10GHz)

SPEC CPU®2017 Integer Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

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Tested by: Cisco Systems
Software Availability: May-2019

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=4 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP -gopenmp
-DSPEC_OPENMP -fno-strict-overflow
-L/usr/local/je5.0.1-64/lib -ljemalloc

602.gcc_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xCORE-AVX512 -qopt-mem-layout-trans=4 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP
-L/usr/local/je5.0.1-64/lib -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=4
-DSPEC_SUPPRESS_OPENMP -gopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

625.x264_s: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -gopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

657.xz_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xCORE-AVX512 -qopt-mem-layout-trans=4 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP -gopenmp
-DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

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=4
-DSPEC_SUPPRESS_OPENMP
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

623.xalancbmk_s: -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

631.deepsjeng_s: Same as 623.xalancbmk_s

641.leela_s: Same as 623.xalancbmk_s

Fortran benchmarks:

-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4

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Peak Optimization Flags (Continued)

Fortran benchmarks (continued):
-nostandard-realloc-lhs

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:
http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V1.2-revK.xml

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

Tested with SPEC CPU®2017 v1.1.0 on 2020-04-12 17:59:44-0400.