Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 6230N, 2.30GHz)

SPECrater®2017_int_base = 227
SPECrater®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

Hardware
CPU Name: Intel Xeon Gold 6230N
Max MHz: 3500
Nominal: 2300
Enabled: 40 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: 27.5 MB I+D on chip per chip
Other: None
Memory: 768 GB (24 x 32 GB 2Rx4 PC4-2933V-R)
Storage: 1 x 240G SSD SATA
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: --
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Results Table

<table>
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<th>Benchmark</th>
<th>Base Copies</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Copies</th>
<th>Peak Seconds</th>
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<tbody>
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<tr>
<td>520.omnetpp_r</td>
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<td>525.x264_r</td>
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<td>531.deepsjeng_r</td>
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<td>483</td>
<td>483</td>
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<td>541.leela_r</td>
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<td>548.exchange2_r</td>
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</tr>
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<td>557.xz_r</td>
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<td>570</td>
<td>571</td>
<td>151</td>
</tr>
</tbody>
</table>

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"

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
Filesystme 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)
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| SPECrate®2017_int_base | 227 |
|SPECrate®2017_int_peak | Not Run |

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

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: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-db10 Tue Sep 10 22:33:17 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 6230N CPU @ 2.30GHz
  2 "physical id"s (chips)
  80 "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 : 40
physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 80
On-line CPU(s) list: 0-79
Thread(s) per core: 2
Core(s) per socket: 20
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6230N CPU @ 2.30GHz
Stepping: 7
CPU MHz: 2300.000

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

| CPU max MHz:         | 3500.0000 |
| CPU min MHz:         | 1000.0000 |
| BogoMIPS:            | 4600.00   |
| Virtualization:      | VT-x      |
| L1d cache:           | 32K       |
| L1i cache:           | 32K       |
| L2 cache:            | 1024K     |
| L3 cache:            | 28160K    |
| NUMA node0 CPU(s):   | 0-2,5,6,10-12,15,16,40-42,45,46,50-52,55,56 |
| NUMA node1 CPU(s):   | 3,4,7-9,13,14,17-19,43,44,47-49,53,54,57-59 |
| NUMA node2 CPU(s):   | 20-22,25,26,30-32,35,36,60-62,65,66,70-72,75,76 |
| NUMA node3 CPU(s):   | 23,24,27-29,33,34,37-39,63,64,67-69,73,74,77-79 |
| Flags:               | fpum vmem pse tsms mce mca cmov 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 dtex64 monitor ds_cpl vmx smx ext tm2 ssse3 |
|                      | sdbg fma cx16 x86pr 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 cdp_13 invpcid_single intel_p6in mba tpr_shadow vnumi flexpriority ept |
|                      | vpid fsqsbase tsc_adjust bni hle avx2 smep bmi2 erms invpcid rtmi cmp mxp rdt_a |
|                      | avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl |
|                      | xsaveopt xsave cqm llc cqm noisy llc cqm_mbms total cqm_mbms local |
|                      | ibpb ibrs stibp dtherm ida arat apnt pts hwp hwp_act_window hwpッグ hwp_pkgs_req pku |
|                      | ospke avx512_vnni arch_capabilities sbsd |

/proc/cpuinfo cache data

- cache size : 28160 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 3 5 6 10 11 12 15 16 40 41 42 45 46 50 51 52 55 56 |
| node 0 size: 191902 MB |
| node 0 free: 191529 MB |
| node 1 cpus: 3 4 7 8 9 13 14 17 18 19 43 44 47 48 49 53 54 57 58 59 |
| node 1 size: 193521 MB |
| node 1 free: 193267 MB |
| node 2 cpus: 20 21 22 25 26 30 31 32 35 36 60 61 62 65 66 70 71 72 75 76 |
| node 2 size: 193521 MB |
| node 2 free: 193268 MB |
| node 3 cpus: 23 24 27 28 29 33 34 37 38 39 63 64 67 68 69 73 74 77 78 79 |
| node 3 size: 193519 MB |
| node 3 free: 193281 MB |
| node distances: |
| node 0 1 2 3 |
| 0: 10 11 21 21 |
| 1: 11 10 21 21 |

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Cisco Systems
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Platform Notes (Continued)

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

From /proc/meminfo
MemTotal: 791004604 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-db10 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-2017-5754 (Meltdown): Not affected
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted Speculation, IBPB, IBRS_FW

run-level 3 Sep 10 20:26

SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdc2 btrfs 222G 52G 170G 24% /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)
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CPU2017 License: 9019
Test Sponsor: Cisco Systems
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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,
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

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Cisco Systems

Cisco UCS B200 M5 (Intel Xeon Gold 6230N, 2.30GHz)

SPEC CPU®2017 Integer Rate Result

SPECrate®2017_int_base = 227
SPECrate®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

Base Portability Flags (Continued)

523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leea_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
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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