Cisco Systems
Cisco UCS C220 M6 (Intel Xeon Platinum 8380, 2.30GHz)

SPECSpeed®2017_fp_base = 230
SPECSpeed®2017_fp_peak = Not Run

Hardware
CPU Name: Intel Xeon Platinum 8380
Max MHz: 3400
Nominal: 2300
Enabled: 80 cores, 2 chips
Orderable: 1.2 Chips
Cache L1: 32 KB I + 48 KB D on chip per core
L2: 1.25 MB I+D on chip per core
L3: 60 MB I+D on chip per chip
Other: None
Memory: 1 TB (32 x 32 GB 2Rx4 PC4-3200V-R)
Storage: 1 x 960 GB M.2 SSD SATA
Other: None

Software
OS: SUSE Linux Enterprise Server 15 SP2
Compiler: Fortran: Version 2021.1 of Intel Fortran Compiler Classic Build 20201112 for Linux;
C/C++: Version 2021.1 of Intel C/C++ Compiler Classic Build 20201112 for Linux
Parallel: Yes
Firmware: Version 4.2.1d released Jul-2021
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage
Cisco Systems
Cisco UCS C220 M6 (Intel Xeon Platinum 8380, 2.30GHz)

<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>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>603.bwaves_s</td>
<td>80</td>
<td>84.4</td>
<td>699</td>
<td>82.8</td>
<td>712</td>
<td>83.3</td>
<td>708</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>80</td>
<td>55.2</td>
<td>302</td>
<td>55.2</td>
<td>302</td>
<td>54.5</td>
<td>306</td>
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<tr>
<td>619.lbm_s</td>
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<td>37.0</td>
<td>142</td>
<td>36.4</td>
<td>144</td>
<td>36.9</td>
<td>142</td>
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<td>621.wrf_s</td>
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<td>197</td>
<td>67.2</td>
<td>197</td>
<td>66.9</td>
<td>198</td>
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<tr>
<td>627.cam4_s</td>
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<td>174</td>
<td>51.9</td>
<td>171</td>
<td>51.0</td>
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<td>628.pop2_s</td>
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<td>91.6</td>
<td>128</td>
<td>93.1</td>
<td>127</td>
<td>93.6</td>
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<tr>
<td>638.imagick_s</td>
<td>80</td>
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<td>297</td>
<td>48.7</td>
<td>296</td>
<td>48.7</td>
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<tr>
<td>644.nab_s</td>
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<td>36.4</td>
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<tr>
<td>654.roms_s</td>
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<td>55.1</td>
<td>286</td>
<td>57.7</td>
<td>273</td>
<td>60.5</td>
<td>260</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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"
cpupower frequency-set -g performance run as root to set the scaling governor to performance.

Environment Variables Notes
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"
MALLOCPROF_CONF = "retain:true"
OMP_STACKSIZE = "192M"

General Notes
Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Redhat Enterprise Linux 8.0
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
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.
## General Notes (Continued)

jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

## Platform Notes

<table>
<thead>
<tr>
<th>BIOS Settings:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel Hyper-Threading Technology set to Disabled</td>
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<tr>
<td>DCU Streamer Prefetch set to Disabled</td>
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<tr>
<td>LLC Dead Line set to Disabled</td>
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<tr>
<td>Memory Refresh Rate set to 1x Refresh</td>
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</tr>
<tr>
<td>ADDDC Sparing set to Disabled</td>
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<td>Patrol Scrub set to Disabled</td>
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<tr>
<td>Energy Efficient Turbo set to Enabled</td>
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<tr>
<td>Processor C6 Report set to Enabled</td>
<td></td>
</tr>
<tr>
<td>Processor C1E set to Enabled</td>
<td></td>
</tr>
</tbody>
</table>

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on localhost Sun Sep 26 07:22:00 2021

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) Platinum 8380 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 : 40
siblings : 40
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39
```

From lscpu from util-linux 2.33.1:

```
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
Address sizes:         46 bits physical, 57 bits virtual
CPU(s):                80
On-line CPU(s) list:   0-79
Thread(s) per core:    1
```
Cisco Systems
Cisco UCS C220 M6 (Intel Xeon Platinum 8380, 2.30GHz)

SPECspeed®2017_fp_base = 230
SPECspeed®2017_fp_peak = Not Run

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

Core(s) per socket: 40
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Platinum 8380 CPU @ 2.30GHz
Stepping: 6
CPU MHz: 801.045
CPU max MHz: 3400.0000
CPU min MHz: 800.0000
BogoMIPS: 4600.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 61440K
NUMA node0 CPU(s): 0-39
NUMA node1 CPU(s): 40-79

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
aperfperf 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_13 invpcid_single ssbd
mib ibp pb tlb ibs enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad
fsgsbase tsc_adjust bmis hle avx2 smep bmi2 ertz invpcid rtm cmq rdt_a avx512f
avx512dav dvseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni
avx512bw avx512vl xsaveopt xsavec xgetbv1 xsavefs cmqm llc cmq_occup_llc cmq_mbm_total
cmq_mbm_local wbnoivd dtherm ida arat pln pt hwp hwp_act_window hwp_ epp
hwp_pkg_req avx512vmb umips kmov auence avx512_vmbi gfnv iavs vpcmulqdq avx512_vnni
avx512_vitalg tme avx512_vpocntdq la57 rdpid md_clear pconfix flush_lid
arch_capabilities

/platform/cpudinfo cache data
 cache size : 61440 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 20 21 22 23 24 25 26 27
 28 29 30 31 32 33 34 35 36 37 38 39
 node 0 size: 515645 MB
 node 0 free: 511646 MB
 node 1 cpus: 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64
 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79
 node 1 size: 516082 MB

(Continued on next page)
SPEC CPU®2017 Floating Point Speed Result

Cisco Systems
Cisco UCS C220 M6 (Intel Xeon Platinum 8380, 2.30GHz)

| SPECspeed®2017_fp_base = 230 |
| SPECspeed®2017_fp_peak = Not Run |

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

Platform Notes (Continued)

node 1 free: 514797 MB
default distances:
0: 10 20
1: 20 10

From /proc/meminfo
MemTotal: 1056490308 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance

From /etc/*release* /etc/*version*

os-release:
NAME="SLES"
VERSION="15-SP2"
VERSION_ID="15.2"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp2"

uname -a:
Linux localhost 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020 (720aeba) x86_64
x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit): Not affected
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
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: usercopy/swaps barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Sep 26 05:07

(Continued on next page)
### Cisco Systems

Cisco UCS C220 M6 (Intel Xeon Platinum 8380, 2.30GHz)

**SPEC CPU 2017 Floating Point Speed Result**

<table>
<thead>
<tr>
<th>SPEC is set to:</th>
<th>/home/cpu2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filesystem</td>
<td>Type Size Used Avail Use% Mounted on</td>
</tr>
<tr>
<td>/dev/sdb2</td>
<td>btrfs 222G 36G 185G 17% /home</td>
</tr>
</tbody>
</table>

From /sys/devices/virtual/dmi/id

- **Vendor**: Cisco Systems Inc
- **Product**: UCSC-C220-M6S
- **Serial**: WZP244104TF

Additional information from dmidecode 3.2 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:**

- 32x 0xCE00 M393A4K40DB3-CWE 32 GB 2 rank 3200

**BIOS:**

- **BIOS Vendor**: Cisco Systems, Inc.
- **BIOS Version**: C220M6.4.2.1d.0.0730210924
- **BIOS Date**: 07/30/2021
- **BIOS Revision**: 5.22

(End of data from sysinfo program)

### Compiler Version Notes

---

**C**  | 619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)
---

Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000

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---

**C++, C, Fortran**  | 607.cactuBSSN_s(base)
---

Intel(R) C++ Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000

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Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000

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Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000

(Continued on next page)
Cisco Systems
Cisco UCS C220 M6 (Intel Xeon Platinum 8380, 2.30GHz)

SPECSpeed®2017_fp_base = 230
SPECSpeed®2017_fp_peak = Not Run

Compiler Version Notes (Continued)

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------------------------------------------------------------------------------
Fortran         | 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------
Fortran, C      | 621.wrf_s(base) 627.cam4_s(base) 628.pop2_s(base)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
Intel(R) 64, Version 2021.1 Build 20201112_000000
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Base Compiler Invocation

C benchmarks:
icc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Base Portability Flags

603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG

(Continued on next page)
Cisco UCS C220 M6 (Intel Xeon Platinum 8380, 2.30GHz)

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Test Date: Sep-2021
Hardware Availability: Apr-2021
CPU2017 License: 9019
Test Sponsor: Cisco Systems
Test Date: Sep-2021
Hardware Availability: Apr-2021

SPECspeed®2017_fp_base = 230
SPECspeed®2017_fp_peak = Not Run

Base Portability Flags (Continued)

628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
-assume byterecl
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-m64 -std=c11 -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-mbranches-within-32B-boundaries

Fortran benchmarks:
-m64 -Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-nostandard-realloc-lhs -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Benchmarks using both Fortran and C:
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Benchmarks using Fortran, C, and C++:
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

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/Intel-ic2021-official-linux64_revA.xml
## SPEC CPU®2017 Floating Point Speed Result

**Cisco Systems**  
Cisco UCS C220 M6 (Intel Xeon Platinum 8380, 2.30GHz)  

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<th>CPU2017 License</th>
<th>9019</th>
<th>Test Date</th>
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<tr>
<td>Test Sponsor</td>
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<td>Hardware Availability</td>
<td>Apr-2021</td>
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<tr>
<td>Tested by</td>
<td>Cisco Systems</td>
<td>Software Availability</td>
<td>Dec-2020</td>
</tr>
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</table>

| SPECspeed®2017_fp_base | 230 
|-------------------------|
| SPECspeed®2017_fp_peak  | Not Run 

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Tested with SPEC CPU®2017 v1.1.8 on 2021-09-26 10:21:59-0400.
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