Cisco Systems
Cisco UCS C220 M6 (Intel Xeon Platinum 8358P, 2.60GHz)

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

Threads

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base = 220</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_fp_peak = Not Run</td>
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</table>

Test Date: Aug-2021
Hardware Availability: Apr-2021
Software Availability: Dec-2020

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<tr>
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</tr>
<tr>
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</tr>
<tr>
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<td>64</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>64</td>
</tr>
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</table>

Hardware

CPU Name: Intel Xeon Platinum 8358P
Max MHz: 3400
Nominal: 2600
Enabled: 64 cores, 2 chips
Orderable: 1.2 Chips
Cache L1: 32 KB I + 48 KB D on chip per core
Cache L2: 1.25 MB I+D on chip per core
Cache L3: 48 MB I+D on chip per chip
Other: None
Memory: 2 TB (32 x 64 GB 2Rx4 PC4-3200V-R)
Storage: 1 x 240 GB SATA SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP2
5.3.18-22-default
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 4.2.1c 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
SPEC CPU®2017 Floating Point Speed Result

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SPECspeed®2017_fp_base = 220
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Results Table

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<tr>
<th>Benchmark</th>
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<th>Ratio</th>
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<td>64</td>
<td>80.8</td>
<td>730</td>
<td>79.8</td>
<td>739</td>
<td>80.3</td>
<td>735</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>64</td>
<td>60.4</td>
<td>276</td>
<td>59.5</td>
<td>280</td>
<td>60.3</td>
<td>276</td>
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<tr>
<td>619.lbm_s</td>
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<td>142</td>
<td>39.4</td>
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<td>621.wrf_s</td>
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<td>63.9</td>
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<tr>
<td>627.cam4_s</td>
<td>64</td>
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<td>165</td>
<td>53.7</td>
<td>165</td>
<td>53.3</td>
<td>166</td>
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<tr>
<td>628.pop2_s</td>
<td>64</td>
<td>139</td>
<td>85.5</td>
<td>139</td>
<td>85.5</td>
<td>140</td>
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<td>56.9</td>
<td>253</td>
<td>57.3</td>
<td>252</td>
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<tr>
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<td>64</td>
<td>40.3</td>
<td>433</td>
<td>40.5</td>
<td>432</td>
<td>40.4</td>
<td>432</td>
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<td>64</td>
<td>86.6</td>
<td>105</td>
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<td>109</td>
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<td>64</td>
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<td>57.6</td>
<td>273</td>
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<td>276</td>
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SPECspeed®2017_fp_base = 220
SPECspeed®2017_fp_peak = Not Run

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 optio 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"

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"
MALLOCONF = "retain:true"
OMP_STACKSIZE = "192M"

General Notes
Binaries compiled on a system with 1x Intel Core i9-7940X CPU + 64GB RAM memory using openSUSE Leap 15.2
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.:
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General Notes (Continued)

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) is mitigated in the system as tested and documented.

Platform Notes

BIOS Settings:
Adjacent Cache Line Prefetcher set to Disabled
DCU Streamer Prefetch set to Disabled
UPI Link Enablement set to 1
UPI Power Management set to Enabled
Sub NUMA Clustering set to Disabled
LLC Dead Line set to Disabled
Memory Refresh Rate set to 1x Refresh
ADDDC Sparing set to Disabled
Patrol Scrub set to Disabled
Enhanced CPU performance set to Auto
Energy Efficient Turbo set to Enabled
Processor C6 Report set to Enabled
Processor C1E set to Enabled
Intel HyperThreading Technology set to Disabled

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d running on install Thu Aug 12 23:06:56 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 8358P CPU @ 2.60GHz
  2 "physical id"s (chips)
  64 "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 : 32
  32 siblings : 32
physical 0: 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 (Continued on next page)
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Cisco UCS C220 M6 (Intel Xeon Platinum 8358P, 2.60GHz)

SPECspeed®2017_fp_base = 220
SPECspeed®2017_fp_peak = Not Run

Platform Notes (Continued)

25 26 27 28 29 30 31
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

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): 64
On-line CPU(s) list: 0-63
Thread(s) per core: 1
Core(s) per socket: 32
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Platinum 8358P CPU @ 2.60GHz
Stepping: 6
CPU MHz: 800.000
CPU max MHz: 3400.0000
CPU min MHz: 800.0000
BogoMIPS: 5200.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 49152K
NUMA node0 CPU(s): 0-31
NUMA node1 CPU(s): 32-63
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 pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtrunc pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt pse36_large tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abmt 3dnowprefetch cpuid_fault epb cat_13 invvpcid_single ssbd
mba ibpb stibp ibrs Enhanced tpr_shadow vmni flexpriority ept vpid ept_ad
fs_base tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm rdt_a avx512f
avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni
avx512bw avx512vl xsaveopt xsavevc xgetbv1 xsavec cgcm_llc cgcm_occup_llc cgcm_mbm_total
cgcm_mbm_local wbnoivd dtherm ida arat pln pts hwp hwp_act_window hwp_epp
hwp_pkg_req avx512vBMI umip pku ospke avx512_vBMI2 qfn1 vaes vpclmulqdq avx512_vnni
avx512_bitalg tme avx512_vpopcntdq l1a57 rdpid md_clear pconfig flush_l1d
arch_capabilities

/proc/cpuinfo cache data

(Continued on next page)
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**SPEC CPU2017 Floating Point Speed Result**

| SPECspeed\(^{2017\_fp\_base}\) = 220 |
| SPECspeed\(^{2017\_fp\_peak}\) = Not Run |

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**Platform Notes (Continued)**

```
cache size : 49152 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
node 0 size: 1031776 MB
node 0 free: 1030681 MB
node 1 cpus: 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63
node 1 size: 1032147 MB
node 1 free: 1023256 MB
node distances:
node 0 1
0: 10 20
1: 20 10

From /proc/meminfo
MemTotal: 2113458600 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 install 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
```

(Continued on next page)
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Platform Notes (Continued)

CVE-2018-3639 (Speculative Store Bypass):
Mitigation: Speculative Store Bypass disabled via prctl and seccomp

CVE-2017-5753 (Spectre variant 1):
Mitigation: usercopy/swapgs 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 Aug 12 18:11
SPEC is set to: /home/cpu2017

From /sys/devices/virtual/dmi/id
Vendor: Cisco Systems Inc
Product: UCSC-C240-M6S
Serial: WZP24460JDZ

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 M393A8G40AB2-CWE 64 GB 2 rank 3200

BIOS:
  BIOS Vendor: Cisco Systems, Inc.
  BIOS Version: C240M6.4.2.1c.10.0723211453
  BIOS Date: 07/23/2021
  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
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================

(Continued on next page)
Cisco Systems

Cisco UCS C220 M6 (Intel Xeon Platinum 8358P, 2.60GHz)

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**Compiler Version Notes (Continued)**

```
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
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Intel(R) C 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 | 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
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
```

---

**Base Compiler Invocation**

C benchmarks:
```shell
icc
```

Fortran benchmarks:
```shell
ifort
```

Benchmarks using both Fortran and C:
```shell
ifort icc
```
## SPEC CPU®2017 Floating Point Speed Result

### Cisco Systems

**Cisco UCS C220 M6 (Intel Xeon Platinum 8358P, 2.60GHz)**

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### Base Compiler Invocation (Continued)

Benchmarks using Fortran, C, and C++:

- icpc icc ifort

### Base Portability Flags

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<td>-DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian -assume byterecl</td>
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### 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  
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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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