Cisco Systems

Cisco UCS C240 M5 (Intel Xeon Platinum 8153, 2.00 GHz)

| SPECspeed2017_fp_base | 106 |
| SPECspeed2017_fp_peak | Not Run |

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems
Test Date: Nov-2018
Hardware Availability: Aug-2017
Software Availability: Oct-2018

Threads

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_base (106)</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s 32</td>
</tr>
<tr>
<td>607.cactuBSSN_s 32</td>
</tr>
<tr>
<td>619.lbm_s 32</td>
</tr>
<tr>
<td>621.wrf_s 32</td>
</tr>
<tr>
<td>627.cam4_s 32</td>
</tr>
<tr>
<td>628.pop2_s 32</td>
</tr>
<tr>
<td>638.imagick_s 32</td>
</tr>
<tr>
<td>644.nab_s 32</td>
</tr>
<tr>
<td>649.fotonik3d_s 32</td>
</tr>
<tr>
<td>654.roms_s 32</td>
</tr>
</tbody>
</table>

Hardware

CPU Name: Intel Xeon Platinum 8153
Max MHz.: 2800
Nominal: 2000
Enabled: 32 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: 22 MB I+D on chip per chip
Other: None
Memory: 768 GB (24 x 32 GB 2Rx4 PC4-2666V-R)
Storage: 1 x 600 GB SAS HDD.15K RPM
Other: None

Software

OS: SUSE Linux Enterprise Server 12 SP2 (x86_64)
Compiler: C/C++: Version 19.0.1.144 of Intel C/C++ Compiler for Linux;
Fortran: Version 19.0.1.144 of Intel Fortran Compiler for Linux
Parallel: Yes
Firmware: Version 4.0.1 released Oct-2018
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
### 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>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
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<tr>
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<td>460</td>
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<td>621.wrf_s</td>
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<tr>
<td>627.cam4_s</td>
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<td>64.2</td>
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<tr>
<td>628.pop2_s</td>
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<td>58.7</td>
<td>204</td>
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</tr>
<tr>
<td>654.roms_s</td>
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<td>139</td>
<td>113</td>
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<td>114</td>
<td>138</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**SPECspeed2017_fp_base = 106**

**SPECspeed2017_fp_peak = Not Run**

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"

### General Notes

Environment variables set by runcpu before the start of the run:

- `KMP_AFFINITY = "granularity=fine,compact"
- `LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64"
- `OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM

Memory using Redhat Enterprise Linux 7.4

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
``` 

Yes: 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
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SPEC CPU2017 Floating Point Speed Result

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Platform Notes (Continued)

Power Performance Tuning set to OS Controls
SNC set to Disabled
Patrol Scrub set to Disabled
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on linux-dkz7 Wed Nov 28 11:22:50 2018

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 8153 CPU @ 2.00GHz
  2 "physical id"s (chips)
  32 "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 : 16
siblings : 16
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 32
On-line CPU(s) list: 0-31
Thread(s) per core: 1
Core(s) per socket: 16
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Platinum 8153 CPU @ 2.00GHz
Stepping: 4
CPU MHz: 2307.195
CPU max MHz: 2800.0000
CPU min MHz: 1000.0000
BogoMIPS: 3990.62
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 22528K
NUMA node0 CPU(s): 0-15

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

NUMA node1 CPU(s): 16-31  
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov 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 aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xptr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb invpcid_single pln pts dtherm hwp hwp_act_window hwp_epp hwp_kgd req intel_pt rsb_cts xsaveopt xsaveopt xsaveopt xsaveopt xgetbv1 cqm_llc cqm_occup_llc

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  
node 0 size: 385626 MB  
node 0 free: 385073 MB  
node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31  
node 1 size: 387054 MB  
node 1 free: 386489 MB  
node distances:  
node 0 1  
0: 10 21  
1: 21 10

From `/proc/meminfo`  
MemTotal: 791225564 kB  
HugePages_Total: 0  
Hugepagesize: 2048 kB

From `/etc/*release*` `/etc/*version*`  
SuSE-release:  
SUSE Linux Enterprise Server 12 (x86_64)  
VERSION = 12  
PATCHLEVEL = 2  
# This file is deprecated and will be removed in a future service pack or release.  
# Please check /etc/os-release for details about this release.

os-release:  
NAME="SLES"  
VERSION="12-SP2"  
VERSION_ID="12.2"  
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"  
ID="sles"  

(Continued on next page)
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Platform Notes (Continued)

ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
   Linux linux-dkz7 4.4.120-92.70-default #1 SMP Wed Mar 14 15:59:43 UTC 2018 (52a83de)
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 27 22:45

SPEC is set to: /home/cpu2017

Files ystem    Type  Size  Used Avail Use% Mounted on
/dev/sda2      xfs   500G  115G  386G  23% /

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. C240M5.4.0.1.139.1003182220 10/03/2018
   Memory:
      12x 0xCE00 M393A4K40BB2-CTD 32 GB 2 rank 2666
      12x 0xCE00 M393A4K40CB2-CTD 32 GB 2 rank 2666

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
| CC  619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base) |
-------------------------------------------------------------------------------
| icc (ICC) 19.0.1.144 20181018                                             |
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
==============================================================================

==============================================================================
| FC  607.cactuBSSN_s(base)                                               |
-------------------------------------------------------------------------------
| icpc (ICC) 19.0.1.144 20181018                                          |
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
| icc (ICC) 19.0.1.144 20181018                                           |
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
| ifort (IFORT) 19.0.1.144 20181018                                        |
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
-------------------------------------------------------------------------------

==============================================================================
| FC  603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base) |
(Continued on next page)
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**Compiler Version Notes (Continued)**

```
ifort (IFORT) 19.0.1.144 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```
==============================================================================
CC  621.wrf_s(base) 627.cam4_s(base) 628.pop2_s(base)
==============================================================================
ifort (IFORT) 19.0.1.144 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
icc (ICC) 19.0.1.144 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

**Base Compiler Invocation**

C benchmarks:
icc -m64 -std=c11

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
ifort -m64 icc -m64 -std=c11

Benchmarks using Fortran, C, and C++:
icpc -m64 icc -m64 -std=c11 ifort -m64

**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
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
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### Base Optimization Flags

**C benchmarks:**
- `xCORE-AVX512`  
- `ipo`  
- `-O3`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-ffinite-math-only`  
- `-qopt-mem-layout-trans=3`  
- `-qopenmp`  
- `-DSPEC_OPENMP`

**Fortran benchmarks:**
- `DSPEC_OPENMP`  
- `xCORE-AVX512`  
- `ipo`  
- `-O3`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-ffinite-math-only`  
- `-qopt-mem-layout-trans=3`  
- `-qopenmp`  
- `-nostandard-realloc-lhs`  
- `-align array32byte`

**Benchmarks using both Fortran and C:**
- `xCORE-AVX512`  
- `ipo`  
- `-O3`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-ffinite-math-only`  
- `-qopt-mem-layout-trans=3`  
- `-qopenmp`  
- `-DSPEC_OPENMP`  
- `-nostandard-realloc-lhs`  
- `-align array32byte`

**Benchmarks using Fortran, C, and C++:**
- `xCORE-AVX512`  
- `ipo`  
- `-O3`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-ffinite-math-only`  
- `-qopt-mem-layout-trans=3`  
- `-qopenmp`  
- `-DSPEC_OPENMP`  
- `-nostandard-realloc-lhs`  
- `-align array32byte`

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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