Cisco Systems
Cisco UCS C240 M5 (Intel Xeon Gold 6134M, 3.20 GHz)

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

Threaded SPECspeed®2017_fp_base = 92.9
SPECspeed®2017_fp_peak = Not Run

Test Date: Jan-2019
Hardware Availability: Aug-2017
Software Availability: Nov-2018

Software:
OS: SUSE Linux Enterprise Server 12 SP2(x86_64) 4.4.120-92.70-default
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
Power Management: --

Hardware:
CPU Name: Intel Xeon Gold 6134M
Max MHz: 3700
Nominal: 3200
Enabled: 16 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: 24.75 MB I+D on chip per chip
Other: None
Memory: 768 GB (24 x 32 GB 2Rx4 PC4-2666V-R)
Storage: 1 x 480G SAS SSD
Other: None

SPECspeed®2017_fp_base (92.9)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_fp_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>16</td>
<td>90.3</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>16</td>
<td>76.6</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>16</td>
<td>96.7</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>16</td>
<td>51.4</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>16</td>
<td>62.8</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>16</td>
<td>65.4</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>16</td>
<td>118</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>16</td>
<td>74.4</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>16</td>
<td>104</td>
</tr>
</tbody>
</table>

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NOTES:
- This result is based on the SPEC CPU®2017 Floating Point Speed Evaluation.
- The test was run on a Cisco UCS C240 M5 with Intel Xeon Gold 6134M processors.
- The test was conducted by Cisco Systems and sponsored by Cisco Systems.

SPEC CPU®2017 Floating Point Speed Evaluation
Copyright 2017-2020 Standard Performance Evaluation Corporation
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SPECspeed®2017_fp_base = 92.9
SPECspeed®2017_fp_peak = Not Run

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>
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<tr>
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<td>90.5</td>
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<td>90.3</td>
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<td>619.lbm_s</td>
<td>16</td>
<td>68.3</td>
<td>76.7</td>
<td>68.4</td>
<td>76.6</td>
<td>68.5</td>
<td>76.4</td>
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<td>86.7</td>
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<td>89.7</td>
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<tr>
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<td>172</td>
<td>51.5</td>
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<td>628.pop2_s</td>
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<td>63.1</td>
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<td>62.7</td>
<td>189</td>
<td>62.8</td>
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<tr>
<td>638.imagick_s</td>
<td>16</td>
<td>221</td>
<td>65.4</td>
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<tr>
<td>644.nab_s</td>
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<td>118</td>
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<td>118</td>
<td>148</td>
<td>118</td>
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<tr>
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<td>74.4</td>
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<td>74.4</td>
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<tr>
<td>654.roms_s</td>
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<td>151</td>
<td>104</td>
<td>151</td>
<td>104</td>
<td>152</td>
<td>104</td>
</tr>
</tbody>
</table>

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

(Continued on next page)
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<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base</th>
<th>92.9</th>
</tr>
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<tbody>
<tr>
<td>SPECspeed®2017_fp_peak</td>
<td>Not Run</td>
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**Test Date:** Jan-2019  
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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: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9  
running on linux-q5q7 Wed Jan 30 17:30:58 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 6134M CPU @ 3.20GHz
  2  "physical id"s (chips)
  16 "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 : 8
siblings : 8
physical 0: cores 0 2 3 9 16 19 26 27
physical 1: cores 0 2 3 9 16 19 26 27
```

From lscpu:

```
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                16
On-line CPU(s) list:   0-15
Thread(s) per core:    1
Core(s) per socket:    8
Socket(s):             2
NUMA node(s):          2
Vendor ID:             GenuineIntel
CPU family:            6
Model:                 85
Model name:            Intel(R) Xeon(R) Gold 6134M CPU @ 3.20GHz
Stepping:              4
CPU MHz:               2958.859
CPU max MHz:           3700.0000
CPU min MHz:           1200.0000
BogoMIPS:              6384.96
Virtualization:        VT-x
L1d cache:             32K
L1i cache:             32K
L2 cache:              1024K
L3 cache:              25344K
NUMA node0 CPU(s):     0-7
```

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Platform Notes (Continued)

NUMA node1 CPU(s): 8-15
Flags: fpu vme de pse tsc mtrr pae 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
aperfmperf eagerfpu pni pclmulqdq dtls64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
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 ida arat epb invpcid_single pln pts
dtherm hwp act_window hwp_epp hwp_pkg_req intel_pt rsb_ctxsw spec_ctrl stibp
retpoline kaiser tpr_shadow vmni flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle
avx2 smep bmi2 ars invpcid ttbranch cmpxth cm relegated avx512f avx512dq v lược
avx512cd avx512bw avx512vl xsaveopt xsaveopt xsaveopt xsaveopt xsaveopt xgetbv1 cqm_llc cqm_occup_llc

From /proc/cpuinfo cache data
  cache size: 25344 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
  node 0 size: 385555 MB
  node 0 free: 381369 MB
  node 1 cpus: 8 9 10 11 12 13 14 15
  node 1 size: 386920 MB
  node 1 free: 383192 MB
  node distances:
  node 0 1
  0: 10 21
  1: 21 10

From /proc/meminfo
  MemTotal: 791015716 kB
  HugePages_Total: 0
  Hugepage_size: 2048 kB

From /usr/bin/lsb_release -d
  SUSE Linux Enterprise Server 12 SP2

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"

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</table>

**Platform Notes (Continued)**

```
VERSION_ID="12.2"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp2"
```

```
uname -a:
    Linux linux-q5q7 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
```

Kernel self-reported vulnerability status:

- CVE-2017-5754 (Meltdown): Mitigation: PTI
- CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS+IBPB

```
runtime 3 Jan 30 12:28
```

SPEC is set to: /home/cpu2017
```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sdc3       xfs   404G   27G  378G   7% /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. C240M5.4.0.1.139.1003182220 10/03/2018
Memory:
```
24x 0xCE00 M393A4K40BB2-CTD 32 GB 2 rank 2666
```

(End of data from sysinfo program)

**Compiler Version Notes**

```
==============================================================================
<table>
<thead>
<tr>
<th>C</th>
<th>619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>icc (ICC) 19.0.1.144 20181018</td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2018 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
</tbody>
</table>
```

```
==============================================================================
<table>
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<tr>
<th>C++, C, Fortran</th>
<th>607.cactuBSSN_s(base)</th>
</tr>
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<tbody>
<tr>
<td>icpc (ICC) 19.0.1.144 20181018</td>
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</tbody>
</table>

### Compiler Version Notes (Continued)

```plaintext
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.
```

---

```plaintext
Fortran         | 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
---------------|---------------------------------------------------------
ifort (IFORT) 19.0.1.144 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```  

---

```plaintext
Fortran, C     | 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:**
```plaintext
icc -m64 -std=c11
```

**Fortran benchmarks:**
```plaintext
ifort -m64
```

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

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

### Base Portability Flags

```plaintext
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)
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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: -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:
http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V1.2-revH.xml

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