Cisco Systems
Cisco UCS C480 M5 (Intel Xeon Gold 6134, 3.20 GHz)

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base = 148</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_fp_peak = Not Run</td>
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</tbody>
</table>

**CPU2017 License:** 9019  
**Test Date:** Jan-2019  
**Test Sponsor:** Cisco Systems  
**Hardware Availability:** Aug-2017  
**Tested by:** Cisco Systems  
**Software Availability:** Oct-2018

| Threads | 0 | 40 | 80 | 120 | 160 | 200 | 240 | 280 | 320 | 360 | 400 | 440 | 480 | 520 | 560 | 600 | 640 | 680 | 720 | 760 | 800 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 603.bwaves_s | 32 | 134 | | | | | | | | | | | | | | | | | | | | |
| 607.cactuBSSN_s | 32 | 137 | | | | | | | | | | | | | | | | | | | | |
| 619.lbm_s | 32 | 125 | | | | | | | | | | | | | | | | | | | | |
| 621.wrf_s | 32 | 90.6 | | | | | | | | | | | | | | | | | | | | |
| 627.cam4_s | 32 | 55.3 | | | | | | | | | | | | | | | | | | | | |
| 628.pop2_s | 32 | 118 | | | | | | | | | | | | | | | | | | | | |
| 638.imagick_s | 32 | 218 | | | | | | | | | | | | | | | | | | | | |
| 644.nab_s | 32 | 109 | | | | | | | | | | | | | | | | | | | | |
| 649.fotonik3d_s | 32 | 196 | | | | | | | | | | | | | | | | | | | | |
| 654.roms_s | 32 | 186 | | | | | | | | | | | | | | | | | | | | |

**Hardware**

- **CPU Name:** Intel Xeon Gold 6134  
- **Max MHz:** 3700  
- **Nominal:** 3200  
- **Enabled:** 32 cores, 4 chips  
- **Orderable:** 2.4 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:** 1536 GB (48 x 32 GB 2Rx4 PC4-2666V-R)  
- **Storage:** 1 x 1 TB HDD, 7.2K RPM  
- **Other:** None

**Software**

- **OS:** SUSE Linux Enterprise Server 12 SP2 (x86_64)  
  - 4.4.120-92.70-default  
- **Compiler:** C/C++: Version 19.0.0.117 of Intel C/C++ Compiler for Linux; Fortran: Version 19.0.0.117 of Intel Fortran Compiler for Linux  
- **Firmware:** Version 3.1.3e released Jun-2018  
- **File System:** xfs  
- **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>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Threads</td>
<td>Seconds</td>
</tr>
<tr>
<td>603.bwaves_s</td>
<td>32</td>
<td>75.8</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>32</td>
<td>125</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>32</td>
<td>38.2</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>32</td>
<td>106</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>32</td>
<td>98.0</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>32</td>
<td>215</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>32</td>
<td>122</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>32</td>
<td>80.2</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>32</td>
<td>84.5</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>32</td>
<td>80.0</td>
</tr>
</tbody>
</table>

SPECspeed®2017_fp_base = 148
SPECspeed®2017_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 i9-7900X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
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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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-9r4j Wed Jan 30 03:52:40 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 6134 CPU @ 3.20GHz
  4 "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 : 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
physical 2: cores 0 1 2 3 10 11 24 27
physical 3: cores 1 3 4 6 7 18 20 22

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:    8
Socket(s):             4
NUMA node(s):          4
Vendor ID:             GenuineIntel
CPU family:            6
Model:                 85
Model name:            Intel(R) Xeon(R) Gold 6134 CPU @ 3.20GHz
Stepping:              4
CPU MHz:               1575.772
CPU max MHz:           3700.0000
CPU min MHz:           1200.0000
BogoMIPS:              6393.14
Virtualization:        VT-x
L1d cache:             32K
L1i cache:             32K
L2 cache:              1024K

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

L3 cache: 25344K
NUMA node0 CPU(s): 0-7
NUMA node1 CPU(s): 8-15
NUMA node2 CPU(s): 16-23
NUMA node3 CPU(s): 24-31
Flags: fpu vme de pse tsc msr pae mca cmov pat pse36 clflush dts acpi mmx fxsr ss sse2 sse3 sse4_1 fma cx16 xtpr pdcm pcid dca sse4_2 sse4_3 sse4_4 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb invpcid_single pln pts dtherm hwlp_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 bsmi invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc

/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: 4 nodes (0-3)
    node 0 cpus: 0 1 2 3 4 5 6 7
    node 0 size: 385622 MB
    node 0 free: 382244 MB
    node 1 cpus: 8 9 10 11 12 13 14 15
    node 1 size: 387057 MB
    node 1 free: 385949 MB
    node 2 cpus: 16 17 18 19 20 21 22 23
    node 2 size: 387057 MB
    node 2 free: 386359 MB
    node 3 cpus: 24 25 26 27 28 29 30 31
    node 3 size: 387054 MB
    node 3 free: 384176 MB
    node distances:
    node 0 distances:
    0: 10 21 21 21
    1: 21 10 21 21
    2: 21 21 10 21
    3: 21 21 21 10

From /proc/meminfo
    MemTotal: 1583914640 kB
    HugePages_Total: 0
    Hugepagesize: 2048 kB

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

(Continued on next page)
Platform Notes (Continued)

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

uname -a:
   Linux linux-9r4j 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

run-level 3 Dec 21 12:48

SPEC is set to: /home/cpu2017
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda1      xfs   930G   41G  890G   5% /

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. C480M5.3.1.3e.0.0613181101 06/13/2018
   Memory:
   48x 0xCE00 M393A4K40BB2-CTD 32 GB 2 rank 2666

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
| C               | 619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base) |
==============================================================================
(Continued on next page)
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Compier Version Notes (Continued)

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

Fortran benchmarks:
ifort -m64

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Base Compiler Invocation (Continued)

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

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

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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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