# SPEC CPU®2017 Floating Point Speed Result

## Cisco Systems

Cisco UCS B200 M5 (Intel Xeon Gold 6240L, 2.60GHz)

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base</th>
<th>SPECspeed®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>129</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

**Thread Count**

|   | 0 | 30 | 60 | 90 | 120 | 150 | 180 | 210 | 240 | 270 | 300 | 330 | 360 | 390 | 420 | 450 | 480 | 510 | 540 | 570 | 600 |
|---|---|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 603.bwaves_s | 36 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 46 |
| 607.cactuBSSN_s | 36 | 3 | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 25 | 27 | 29 | 31 | 33 | 35 | 37 | 39 | 41 | 43 | 45 |
| 619.lbm_s | 36 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 46 |
| 621.wrf_s | 36 | 122 | 149 | 176 | 203 | 230 | 257 | 284 | 311 | 338 | 365 | 392 | 419 | 446 | 473 | 500 | 527 | 554 | 581 | 608 | 635 | 662 | 689 |
| 627.cam4_s | 36 | 90.6 | 117.6 | 144.6 | 171.6 | 198.6 | 225.6 | 252.6 | 279.6 | 306.6 | 333.6 | 360.6 | 387.6 | 414.6 | 441.6 | 468.6 | 495.6 | 522.6 | 549.6 | 576.6 | 603.6 | 630.6 | 657.6 |
| 628.pop2_s | 36 | 63.6 | 90.6 | 117.6 | 144.6 | 171.6 | 198.6 | 225.6 | 252.6 | 279.6 | 306.6 | 333.6 | 360.6 | 387.6 | 414.6 | 441.6 | 468.6 | 495.6 | 522.6 | 549.6 | 576.6 | 603.6 | 630.6 |
| 638.imagick_s | 36 | 107 | 149 | 191 | 233 | 275 | 317 | 359 | 401 | 443 | 485 | 527 | 569 | 611 | 653 | 695 | 737 | 779 | 821 | 863 | 905 | 947 | 989 |
| 644.nab_s | 36 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 225 |
| 649.fotonik3d_s | 36 | 83.0 | 119 | 155 | 191 | 227 | 263 | 303 | 339 | 375 | 411 | 447 | 483 | 519 | 555 | 591 | 627 | 663 | 699 | 735 | 771 | 807 | 843 |
| 654.roms_s | 36 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 |

**Hardware**

<table>
<thead>
<tr>
<th>CPU Name</th>
<th>Intel Xeon Gold 6240L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz</td>
<td>3900</td>
</tr>
<tr>
<td>Nominal</td>
<td>2600</td>
</tr>
<tr>
<td>Enabled</td>
<td>36 cores, 2 chips</td>
</tr>
<tr>
<td>Orderable</td>
<td>1.2 Chips</td>
</tr>
<tr>
<td>Cache L1</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>L2</td>
<td>1 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3</td>
<td>24.75 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>768 GB (24 x 32 GB 2Rx4 PC4-2933V-R)</td>
</tr>
<tr>
<td>Storage</td>
<td>1 x 1.9 TB SSD SAS</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
</tbody>
</table>

**Software**

<table>
<thead>
<tr>
<th>OS</th>
<th>SUSE Linux Enterprise Server 15 (x86_64)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler</td>
<td>C/C++: Version 19.0.4.227 of Intel C/C++ Compiler for Linux; Fortran: Version 19.0.4.227 of Intel Fortran Compiler for Linux</td>
</tr>
<tr>
<td>Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>Firmware</td>
<td>Version 4.0.4b released Apr-2019</td>
</tr>
<tr>
<td>File System</td>
<td>xfs</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
<tr>
<td>Power Management</td>
<td>--</td>
</tr>
</tbody>
</table>
**Cisco Systems**
Cisco UCS B200 M5 (Intel Xeon Gold 6240L, 2.60GHz)

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems
Test Date: Aug-2019
Hardware Availability: Apr-2019
Software Availability: May-2019

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### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
<th>Threads</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
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</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>36</td>
<td>113</td>
<td>520</td>
<td>114</td>
<td>520</td>
<td>113</td>
<td>523</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>36</td>
<td>112</td>
<td>149</td>
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<tr>
<td>619.lbm_s</td>
<td>36</td>
<td>54.6</td>
<td>96.0</td>
<td>54.3</td>
<td>96.5</td>
<td>54.2</td>
<td>96.7</td>
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<tr>
<td>627.cam4_s</td>
<td>36</td>
<td>97.9</td>
<td>90.6</td>
<td>97.9</td>
<td>90.5</td>
<td>97.8</td>
<td>90.6</td>
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<tr>
<td>628.pop2_s</td>
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<td>187</td>
<td>63.5</td>
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<td>64.0</td>
<td>187</td>
<td>63.6</td>
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<tr>
<td>638.imagick_s</td>
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<td>131</td>
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<tr>
<td>644.nab_s</td>
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<td>649.fotonik3d_s</td>
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<td>109</td>
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<td>83.0</td>
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<tr>
<td>654.roms_s</td>
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<td>133</td>
<td>118</td>
<td>132</td>
<td>119</td>
<td>133</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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### Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

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### General Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i9-799X 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

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:
Intel HyperThreading Technology set to Disabled
SNC set to Disabled
## Platform Notes (Continued)

Power Performance Tuning set to OS Controls
Patrol Scrub set to Disabled
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bce01c0f
running on linux-pmqx Sat Sep 7 23:09:24 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 6240L CPU @ 2.60GHz
  2 "physical id"s (chips)
  36 "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 : 18
siblings : 18
physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
```

From lscpu:
```
Architecture:        x86_64
CPU op-mode(s):      32-bit, 64-bit
Byte Order:          Little Endian
CPU(s):              36
On-line CPU(s) list: 0-35
Thread(s) per core:  1
Core(s) per socket:  18
Socket(s):           2
NUMA node(s):        2
Vendor ID:           GenuineIntel
CPU family:          6
Model:               85
Model name:          Intel(R) Xeon(R) Gold 6240L CPU @ 2.60GHz
Stepping:            7
CPU MHz:             2600.000
CPU max MHz:         3900.0000
CPU min MHz:         1000.0000
BogoMIPS:            5200.00
Virtualization:      VT-x
L1d cache:           32K
L1i cache:           32K
L2 cache:            1024K
L3 cache:            25344K
NUMA node0 CPU(s):   0-17
NUMA node1 CPU(s):   18-35
```

(Continued on next page)
Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 6240L, 2.60GHz)

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

SPECspeed®2017_fp_base = 129
SPECspeed®2017_fp_peak = Not Run

Test Date: Aug-2019
Hardware Availability: Apr-2019
Software Availability: May-2019

Platform Notes (Continued)

Flags:           fpu vme de pse tsc msr 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 nop1 xtopology
                 nonstop_tsc cpuid
                 aperfmperf tsc_known_freq pni pclmulqdq dtes64 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
                 cpuid_fault
                 epb cat_13 cdp_13 invpcid_single intel_ppin mba tpr_shadow vmmi flexpriority
                 ept vpid fsgsbased tsc_adjust bmi1 hle avx2 smep bmi2  ems invpcid rtm
                 cqm mpx rdt_a
                 avx512f avx512dq rdseed adx clflushopt clwb intel_pt avx512cd avx512bw
                 avx512vl
                 xsaveopt xsave xaxvec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbb_total
                 cqm_mbb_local
                 ibpb ibrs dtlb2 dtherm ida arat pln pts hwpp hwp_act_window hwp_epp
                 hwp_pkg_req pkupk
                 ospke avx512_vnni arch_capabilities ssbd

            /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 8 9 10 11 12 13 14 15 16 17
                 node 0 size: 385616 MB
                 node 0 free: 384888 MB
                 node 1 cpus: 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
                 node 1 size: 387016 MB
                 node 1 free: 382763 MB
                 node distances:
                 node 0 1
                 0: 10 21
                 1: 21 10

            From /proc/meminfo
                 MemTotal: 791176440 kB
                 HugePages_Total: 0
                 Hugepagesize: 4096 kB

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

                 uname -a:

            (Continued on next page)
Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 6240L, 2.60GHz)

SPECspeed®2017_fp_base = 129
SPECspeed®2017_fp_peak = Not Run

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

Platform Notes (Continued)

Linux linux-pmqx 4.12.14-23-default #1 SMP Tue May 29 21:04:44 UTC 2018 (cd0437b)
x86_64 x86_64 x86_64 GNU/Linux
run-level 3 Sep 7 20:45
SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb4 btrfs 169G 18G 151G 11% /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. B200M5.4.0.4b.0.0407191258 04/07/2019
Memory:
24x 0xCE00 M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2934

(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 for applications running on Intel(R) 64,
  Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
******************************************************************************

******************************************************************************
C++, C, Fortran | 607.cactuBSSN_s(base)
******************************************************************************
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
  64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
******************************************************************************

******************************************************************************
Fortran | 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
******************************************************************************

(Continued on next page)
Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 6240L, 2.60GHz)

SPECspeed®2017_fp_base = 129
SPECspeed®2017_fp_peak = Not Run

Compiler Version Notes (Continued)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

---------------------------------------------------------------------
Fortran, C      | 621.wrf_s(base) 627.cam4_s(base) 628.pop2_s(base)
---------------------------------------------------------------------

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
Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 6240L, 2.60GHz)

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<tr>
<td>SPECspeed®2017_fp_peak = Not Run</td>
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</tbody>
</table>

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Test Date: Aug-2019
Tested by: Cisco Systems
Hardware Availability: Apr-2019
Software Availability: May-2019

Base Optimization Flags

C benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -gopenmp -DSPEC_OPENMP

Fortran benchmarks:
-DSPEC_OPENMP -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -gopenmp
-nostandard-realloc-lhs

Benchmarks using both Fortran and C:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -gopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs

Benchmarks using Fortran, C, and C++:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -gopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs

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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Report generated on 2019-10-01 14:29:00 by CPU2017 PDF formatter v6255.
Originally published on 2019-10-01.