## Cisco Systems

Cisco UCS B200 M5 (Intel Xeon Gold 6150, 2.70GHz)

### SPECspeed®2017_fp_base = 117
### SPECspeed®2017_fp_peak = 118

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed®2017_fp_base</th>
<th>SPECspeed®2017_fp_peak</th>
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<tr>
<td>0</td>
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<td>117</td>
</tr>
<tr>
<td>30</td>
<td>156</td>
<td>118</td>
</tr>
<tr>
<td>60</td>
<td>359</td>
<td></td>
</tr>
</tbody>
</table>

### Software

- **OS:** SUSE Linux Enterprise Server 12 SP2 (x86_64) 4.4.21-69-default
- **Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux; Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux
- **Parallel:** Yes
- **Firmware:** Version 3.2.1d released Jul-2017
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** None
- **Power Management:** --

### Hardware

- **CPU Name:** Intel Xeon Gold 6150
- **Max MHz:** 3700
- **Nominal:** 2700
- **Enabled:** 36 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:** 384 GB (24 x 16 GB 2Rx4 PC4-2666V-R)
- **Storage:** 1 x 240 GB M.2 SATA SSD
- **Other:** None

### Test Details

- **CPU2017 License:** 9019
- **Test Sponsor:** Cisco Systems
- **Tested by:** Cisco Systems
- **Test Date:** Oct-2017
- **Hardware Availability:** Aug-2017
- **Software Availability:** Sep-2017
## SPEC CPU®2017 Floating Point Speed Result

**Cisco Systems**  
Cisco UCS B200 M5 (Intel Xeon Gold 6150, 2.70GHz)  

**SPECspeed®2017_fp_base** = 117  
**SPECspeed®2017_fp_peak** = 118

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<th>Seconds</th>
<th>Ratio</th>
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<td>603.bwaves_s</td>
<td>36</td>
<td><strong>118</strong></td>
<td>500</td>
<td>119</td>
<td>497</td>
<td>118</td>
<td>501</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>36</td>
<td>107</td>
<td>156</td>
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<td>105</td>
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<td>619.lbm_s</td>
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<td><strong>44.1</strong></td>
<td>119</td>
<td>44.0</td>
<td>119</td>
<td>44.1</td>
<td>36</td>
<td>119</td>
<td>44.1</td>
<td>119</td>
<td>44.1</td>
<td>119</td>
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<td>621.wrf_s</td>
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<td>95.3</td>
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<td>94.6</td>
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<td><strong>95.2</strong></td>
<td>36</td>
<td>132</td>
<td><strong>99.9</strong></td>
<td>132</td>
<td>100</td>
<td>133</td>
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<td>81.4</td>
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<td>81.3</td>
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<td>81.4</td>
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<td>82.6</td>
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<td>654.roms_s</td>
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<td><strong>130</strong></td>
<td><strong>122</strong></td>
<td>129</td>
<td>122</td>
<td>130</td>
</tr>
</tbody>
</table>

**SPECspeed®2017_fp_base** = 117  
**SPECspeed®2017_fp_peak** = 118

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;/home/cpu2017/je5.0.1-32;/home/cpu2017/je5.0.1-64"
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
```

---

### Platform Notes

BIOS Settings:

- Intel HyperThreading Technology set to Disabled
- CPU performance set to Enterprise
- Power Performance Tuning set to OS
- SNC set to Disabled
- IMC Interleaving set to Auto
- Patrol Scrub set to Disabled

Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f

(Continued on next page)
Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 6150, 2.70GHz)

Platform Notes (Continued)

running on linux-mys2 Sun Oct 29 03:20:56 2017

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 6150 CPU @ 2.70GHz
    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 6150 CPU @ 2.70GHz
  Stepping:              4
  CPU MHz:               1444.764
  CPU max MHz:           3700.0000
  CPU min MHz:           1200.0000
  BogoMIPS:              5400.03
  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
  Flags:                 fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
                        pat pse36 clflush dts acpi mxr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdscp
                        lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
                        aperfmperf eagerfpu pni pclmulqdq dtes64monitor ds_cpl vmx smx est tm2 ssse3 sdbg

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Cisco Systems  
Cisco UCS B200 M5 (Intel Xeon Gold 6150, 2.70GHz)  

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

**Platform Notes (Continued)**

fma cx16 xtpr 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 pln pts dtherm hwp hwp_act_window hwp_epp hwp_pkg_req intel_pt tpr_shadow vmx flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsaves xgetbv1 cqm_11c cqm_occup_11c

/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: 192074 MB
	node 0 free: 187863 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: 193504 MB
	node 1 free: 189503 MB

node distances:
	node 0 1

0: 10 21

1: 21 10

From /proc/meminfo

*MemTotal: 394832388 kB*

*HugePages_Total: 0*

Hugepagesize: 2048 kB

/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"

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"

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

```
uname -a:
    Linux linux-mys2 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016 (9464f67)
x86_64 x86_64 x86_64 GNU/Linux
run-level 3 Jan 2 14:43

SPEC is set to: /home/cpu2017
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda3       xfs   182G  127G   56G  70% /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. B200M5.3.2.1d.5.0727171353 07/27/2017
Memory:
    24x 0xCE00 M393A2G40EB2-CTD 16 GB 2 rank 2666

(End of data from sysinfo program)

**Compiler Version Notes**

```
C                                   619.lbm_s(base, peak) 638.imagick_s(base, peak)
                                   644.nab_s(base, peak)
-----------------------------------
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-----------------------------------
C++, C, Fortran                   607.cactuBSSN_s(base, peak)
-----------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-----------------------------------
Fortran                           603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak)
                                   654.roms_s(base, peak)
```

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Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 6150, 2.70GHz)

SPEC Speed\textsuperscript{\textregistered}2017\_fp\_base = 117
SPEC Speed\textsuperscript{\textregistered}2017\_fp\_peak = 118

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

Test Date: Oct-2017
Hardware Availability: Aug-2017
Software Availability: Sep-2017

Compiler Version Notes (Continued)

ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
==============================================================================
Fortran, C | 621.wrf\_s(base, peak) 627.cam4\_s(base, peak)
| 628.pop2\_s(base, peak)
-----------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------------

Base Compiler Invocation

C benchmarks:
icc
Fortran benchmarks:
ifort
Benchmarks using both Fortran and C:
ifort icc
Benchmarks using Fortran, C, and C++:
icpc icc ifort

Base Portability Flags

603.bwaves\_s: -DSPEC\_LP64
607.cactusBSSN\_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 6150, 2.70GHz)

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<thead>
<tr>
<th>SPECspeed®2017_fp_base = 117</th>
<th>Test Date: Oct-2017</th>
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<tr>
<td>SPECspeed®2017_fp_peak = 118</td>
<td>Hardware Availability: Aug-2017</td>
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</tr>
<tr>
<td>Test Sponsor: Cisco Systems</td>
<td>Tested by: Cisco Systems</td>
</tr>
</tbody>
</table>

### 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

### Base Other Flags
- **C benchmarks:**
  - -m64
  - -std=c11

- **Fortran benchmarks:**
  - -m64

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

- **Benchmarks using Fortran, C, and C++:**
  - -m64
  - -std=c11

### Peak Compiler Invocation
- **C benchmarks:**
  - icc

- **Fortran benchmarks:**
  - ifort

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Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 6150, 2.70GHz)

| SPECspeed®2017_fp_base | 117 |
| SPECspeed®2017_fp_peak | 118 |

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

Peak Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Peak Portability Flags
Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
619.lbm_s: -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512
-qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP

638.imagick_s: -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-DSPEC_OPENMP

644.nab_s: Same as 638.imagick_s

Fortran benchmarks:
-prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPRESS_OPENMP
-DSPEC_OPENMP -O2 -xCORE-AVX512 -qopt-prefetch -ipo -O3
-ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3 -qopenmp
-nostandard-realloc-lhs -align array32byte

Benchmarks using both Fortran and C:
621.wrf_s: -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512
-qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -nostandard-realloc-lhs -align array32byte

627.cam4_s: -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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CPU2017 License: 9019
Test Sponsor: Cisco Systems
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SPECspeed®2017_fp_peak = 118
SPECspeed®2017_fp_base = 117

Peak Optimization Flags (Continued)

628.pop2_s: Same as 621.wrf_s

Benchmarks using Fortran, C, and C++:
-prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512 -qopt-prefetch
-ipo -O3 -ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -nostandard-realloc-lhs
-align array32byte

Peak Other Flags

C benchmarks:
-m64 -std=c11

Fortran benchmarks:
-m64

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

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

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml
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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