Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Platinum 8180M, 2.50 GHz)

SPECrate®2017_fp_base = 245
SPECrate®2017_fp_peak = 250

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

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</table>

--- SPECrate®2017_fp_base (245) ---
--- SPECrate®2017_fp_peak (250) ---

Hardware
CPU Name: Intel Xeon Platinum 8180M
Max MHz: 3800
Nominal: 2500
Enabled: 56 cores, 2 chips, 2 threads/core
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: 38.5 MB I+D on chip per chip
Other: None
Memory: 384 GB (24 x 16 GB 2Rx4 PC4-2666V-R)
Storage: 1 x 1 TB SAS HDD, 7.2K RPM
Other: None

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: No
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: --
## SPEC CPU®2017 Floating Point Rate Result

**Cisco Systems**  
Cisco UCS B200 M5 (Intel Xeon Platinum 8180M, 2.50 GHz)

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### Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset commands to bind each copy to a specific processor. For details, please see the config file.

### 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:

```
LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/je5.0.1-64"
```

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
```

No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.  
No: 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.
Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Platinum 8180M, 2.50 GHz)

SPEC CPU®2017 Floating Point Rate Result
Copyright 2017-2020 Standard Performance Evaluation Corporation

**SPECrater®2017_fp_base = 245**
**SPECrater®2017_fp_peak = 250**

<table>
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<th>CPU2017 License: 9019</th>
<th>Test Date: Dec-2017</th>
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<tbody>
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<td>Test Sponsor: Cisco Systems</td>
<td>Hardware Availability: Aug-2017</td>
</tr>
<tr>
<td>Tested by: Cisco Systems</td>
<td>Software Availability: Sep-2017</td>
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</table>

### General Notes (Continued)

No: 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.

This benchmark result is intended to provide perspective on past performance using the historical hardware and/or software described on this result page.

The system as described on this result page was formerly generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC OSG Policy document, http://www.spec.org/osg/policy.html

This measured result may not be representative of the result that would be measured were this benchmark run with hardware and software available as of the publication date.

### Platform Notes

BIOS Settings:
Intel HyperThreading Technology set to Enabled
CPU performance set to Enterprise
Power Performance Tuning set to OS Controls
SNC set to Enabled
IMC Interleaving set to 1-way Interleave
Patrol Scrub set to Disabled
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on linux-uezu Wed Dec 20 06:06:00 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) Platinum 8180M CPU @ 2.50GHz
  2 "physical id"s (chips)
  112 "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 : 28
siblings : 56
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
```

(Continued on next page)
SPEC CPU®2017 Floating Point Rate Result

Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Platinum 8180M, 2.50 GHz)

SPECrate®2017_fp_base = 245
SPECrate®2017_fp_peak = 250

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

Platform Notes (Continued)

28 29 30

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 112
On-line CPU(s) list: 0-111
Thread(s) per core: 2
Core(s) per socket: 28
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Platinum 8180M CPU @ 2.50GHz
Stepping: 4
CPU MHz: 1437.340
CPU max MHz: 3800.0000
CPU min MHz: 1000.0000
BogoMIPS: 4999.98
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 39424K
NUMA node0 CPU(s): 0-3,7-9,14-17,21-23,25-27,60-61,66-69,74-76,84-87,91-93,98-101,105-107
NUMA node1 CPU(s): 4-6,10-13,18-20,24-27,62-63,66-69,77-79
NUMA node2 CPU(s): 28-31,35-37,42-45,49-51,84-87,91-93,98-101,105-107
NUMA node3 CPU(s): 32-34,38-41,46-48,52-55,88-90,94-97,102-104,108-111

Flags:
 fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
 pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtsscp
 lm constant_tsc arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
 aperfmpref perfprof eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
 fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
 xsave avx f16c rdrand lahf_lm abm 3nowprefetch ida arat epb pln pts dtherm hwp
 hwp_act_window hwp_epp hwp_pkg_req intel_pt tpr_shadow vmi flexpriority ept vpid
 fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cmpx cmpx8bw avx512f
 avx512dq rdseed adx smap clflushopt clwb avx512fd avx512vl xsaveopt xsavec
 xgetbv1 cqm_1llc cqm_occup_llc

~/proc/cpuinfo cache data
cache size : 39424 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.
available: 4 nodes (0-3)

(Continued on next page)
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Platform Notes (Continued)

node 0 cpus: 0 1 2 3 7 8 9 14 15 16 17 21 22 23 25 26 27 29 30 31 35 36 37 42 43 44 45 49 50 51 84 85 86 87 91 92 93 98 99 100 108 109 110 111
node 0 size: 95320 MB
node 0 free: 94911 MB
node 1 cpus: 4 5 6 10 11 12 13 18 19 20 24 25 26 27 60 61 62 66 67 68 69 74 75 76 80 81
node 1 size: 96753 MB
node 1 free: 96358 MB
node 2 cpus: 28 29 30 31 35 36 37 42 43 44 45 49 50 51 84 85 86 87 91 92 93 98 99 100 101 105 106 107
node 2 size: 96753 MB
node 2 free: 96331 MB
node 3 cpus: 32 33 34 38 39 40 41 46 47 48 52 53 54 55 58 88 89 90 94 95 96 97 102 103 104 108 109 110 111
node 3 size: 96750 MB
node 3 free: 96405 MB
node distances:
node 0 1 2 3
  0: 10 11 21 21
  1: 11 10 21 21
  2: 21 21 10 11
  3: 21 21 11 10

From /proc/meminfo
MemTotal: 394831556 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"
    ANSI_COLOR="0;32"
    CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
Linux linux-uezu 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016 (9464f67)
x86_64 x86_64 x86_64 GNU/Linux

(Continued on next page)
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Platform Notes (Continued)

run-level 3 Dec 31 19:29
SPEC is set to: /home/cpu2017
Filesystem     Type Size  Used Avail Use% Mounted on
/dev/sda1      xfs   894G  155G  739G  18% /

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               | 519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak)
==============================================================================
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
C++             | 508.namd_r(base, peak) 510.parest_r(base, peak)
==============================================================================
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
C++, C          | 511.povray_r(base, peak) 526.blender_r(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.

==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
(Continued on next page)
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Compiler Version Notes (Continued)

icpc (ICC) 18.0.0 20170811
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icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.0 20170811
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==============================================================================
Fortran | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak)
        | 554.roms_r(base, peak)
==============================================================================

ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
Fortran, C | 521.wrf_r(base, peak) 527.cam4_r(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

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using both C and C++:
icpc icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort
Cisco Systems  
Cisco UCS B200 M5 (Intel Xeon Platinum 8180M, 2.50 GHz)  

SPEC CPU®2017 Floating Point Rate Result  

Copyright 2017-2020 Standard Performance Evaluation Corporation  

Cisco Systems  

SPECrate®2017_fp_base = 245  
SPECrate®2017_fp_peak = 250  

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

Base Portability Flags

503.bwaves_r: --DSPEC_LP64  
507.cactuBSSN_r: --DSPEC_LP64  
508.namd_r: --DSPEC_LP64  
510.parest_r: --DSPEC_LP64  
511.povray_r: --DSPEC_LP64  
519.lbm_r: --DSPEC_LP64  
521.wrf_r: --DSPEC_LP64 --DSPEC_CASE_FLAG --convert big_endian  
526.blender_r: --DSPEC_LP64 --DSPEC_LINUX --funsigned-char  
527.cam4_r: --DSPEC_LP64 --DSPEC_CASE_FLAG  
538.imagick_r: --DSPEC_LP64  
544.nab_r: --DSPEC_LP64  
549.fotonik3d_r: --DSPEC_LP64  
554.roms_r: --DSPEC_LP64

Base Optimization Flags

C benchmarks:  
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3

C++ benchmarks:  
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3

Fortran benchmarks:  
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3  
-nostandard-realloc-lhs -align array32byte

Benchmarks using both Fortran and C:  
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3  
-nostandard-realloc-lhs -align array32byte

Benchmarks using both C and C++:  
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3

Benchmarks using Fortran, C, and C++:  
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3  
-nostandard-realloc-lhs -align array32byte
Cisco Systems  
Cisco UCS B200 M5 (Intel Xeon Platinum 8180M, 2.50 GHz)  

<table>
<thead>
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<th>SPECrate®2017_fp_base = 245</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak = 250</td>
</tr>
</tbody>
</table>

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

| **Test Date:** Dec-2017 | **Hardware Availability:** Aug-2017 | **Software Availability:** Sep-2017 |

### Base Other Flags

- **C benchmarks:**
  - `-m64 -std=c11`

- **C++ benchmarks:**
  - `-m64`

- **Fortran benchmarks:**
  - `-m64`

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

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

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

### Peak Compiler Invocation

- **C benchmarks:**
  - `icc`

- **C++ benchmarks:**
  - `icpc`

- **Fortran benchmarks:**
  - `ifort`

- **Benchmarks using both Fortran and C:**
  - `ifort icc`

- **Benchmarks using both C and C++:**
  - `icpc icc`

- **Benchmarks using Fortran, C, and C++:**
  - `icpc icc ifort`

### Peak Portability Flags

Same as Base Portability Flags
Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Platinum 8180M, 2.50 GHz)

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

SPECrate®2017_fp_base = 245
SPECrate®2017_fp_peak = 250

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

Peak Optimization Flags

C benchmarks:
519.lbm_r: -prof-gen(pass 1) -prof-use(pass2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3
538.imagick_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3
544.nab_r: Same as 519.lbm_r

C++ benchmarks:
-prof-gen(pass1) -prof-use(pass2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

Fortran benchmarks:
503.bwaves_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3
-nostandard-realloc-lhs -align array32byte
549.fotonik3d_r: Same as 503.bwaves_r
554.roms_r: -prof-gen(pass1) -prof-use(pass2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

Benchmarks using both Fortran and C:
-prof-gen(pass1) -prof-use(pass2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

Benchmarks using both C and C++:
-prof-gen(pass1) -prof-use(pass2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

Benchmarks using Fortran, C, and C++:
-prof-gen(pass1) -prof-use(pass2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Platinum 8180M, 2.50 GHz)  

SPECrater®2017_fp_base = 245  
SPECrater®2017_fp_peak = 250

CPU2017 License: 9019
Test Sponsor: Cisco Systems
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Test Date: Dec-2017
Hardware Availability: Aug-2017
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Peak Other Flags

C benchmarks:
- m64 -std=c11

C++ benchmarks:
- m64

Fortran benchmarks:
- m64

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

Benchmarks using both C 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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