Cisco Systems

Cisco UCS B200 M5 (Intel Xeon Gold 6238M, 2.10GHz)

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base</th>
<th>135</th>
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</thead>
<tbody>
<tr>
<td>SPECspeed®2017_fp_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

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

| Threads | 0 | 30.0 | 60.0 | 90.0 | 120 | 150 | 180 | 210 | 240 | 270 | 300 | 330 | 360 | 390 | 420 | 450 | 480 | 510 | 540 | 570 | 600 |
|---------|---|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 603.bwaves_s | 44 |      |      |      | 154 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 607.cactuBSSN_s | 44 |      |      |      | 104 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 619.lbm_s | 44 |      |      |      | 119 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 621.wrf_s | 44 |      |      |      | 97.7 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 627.cam4_s | 44 |      |      |      | 60.0 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 628.pop2_s | 44 |      |      |      | 128 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 638.imagick_s | 44 |      |      |      | 228 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 644.nab_s | 44 |      |      |      | 84.3 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 649.fotonik3d_s | 44 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 654.roms_s | 44 |      |      |      | 37  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

**Hardware**

CPU Name: Intel Xeon Gold 6238M
Max MHz: 3700
Nominal: 2100
Enabled: 44 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: 30.25 MB I+D on chip per chip
Other: None
Memory: 768 GB (24 x 32 GB 2Rx4 PC4-2933V-R)
Storage: 1 x 240G SSD SATA
Other: None

**Software**

OS: SUSE Linux Enterprise Server 15 (x86_64) 4.12.14-23-default
Compiler: 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
Parallel: Yes
Firmware: Version 4.0.4b released Apr-2019
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: --
Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 6238M, 2.10GHz)

CPU2017 License: 9019
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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>
<td>603.bwaves_s</td>
<td>44</td>
<td>112</td>
<td>527</td>
<td>112</td>
<td>529</td>
<td>112</td>
<td>528</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>44</td>
<td>108</td>
<td>154</td>
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<td>154</td>
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<tr>
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<tr>
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<td>90.7</td>
<td>97.7</td>
<td>90.7</td>
<td>97.7</td>
</tr>
<tr>
<td>628.pop2_s</td>
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<td>59.8</td>
<td>198</td>
<td>60.0</td>
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<tr>
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<td>128</td>
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<td>128</td>
<td>112</td>
<td>128</td>
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<tr>
<td>644.nab_s</td>
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<tr>
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<td>108</td>
<td>84.4</td>
<td>111</td>
<td>82.1</td>
<td>108</td>
<td>84.3</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>44</td>
<td>115</td>
<td>137</td>
<td>114</td>
<td>138</td>
<td>115</td>
<td>137</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/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
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
CPU performance set to Enterprise

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

**Cisco Systems**

Cisco UCS B200 M5 (Intel Xeon Gold 6238M, 2.10GHz)  

| SPECspeed®2017_fp_base = | 135 |
| SPECspeed®2017_fp_peak = | Not Run |

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

## Platform Notes (Continued)

Power Performance Tuning set to OS Controls  
SNC set to Disabled  
IMC Interleaving set to Auto  
Sysinfo program /home/cpu2017/bin/sysinfo  
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9  
runtime on linux-db10 Sat Sep 7 23:13:52 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 6238M CPU @ 2.10GHz  
- **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**: 22  
  - **siblings**: 22  
  - **physical 0**: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27 28  
  - **physical 1**: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27 28

From lscpu:

- **Architecture**: x86_64  
- **CPU op-mode(s)**: 32-bit, 64-bit  
- **Byte Order**: Little Endian  
- **CPU(s)**: 44  
- **On-line CPU(s) list**: 0-43  
- **Thread(s) per core**: 1  
- **Core(s) per socket**: 22  
- **Socket(s)**: 2  
- **NUMA node(s)**: 2  
- **Vendor ID**: GenuineIntel  
- **CPU family**: 6  
- **Model**: 85  
- **Model name**: Intel(R) Xeon(R) Gold 6238M CPU @ 2.10GHz  
- **Stepping**: 7  
- **CPU MHz**: 2100.000  
- **CPU max MHz**: 3700.0000  
- **CPU min MHz**: 1000.0000  
- **BogoMIPS**: 4200.00  
- **Virtualization**: VT-x  
- **L1d cache**: 32K  
- **L1i cache**: 32K  
- **L2 cache**: 1024K  
- **L3 cache**: 30976K  
- **NUMA node0 CPU(s)**: 0-21

(Continued on next page)
Cisco Systems  
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**Test Sponsor:** Cisco Systems  
**Tested by:** Cisco Systems  
**Test Date:** Aug-2019  
**Hardware Availability:** Apr-2019  
**Software Availability:** May-2019

### Platform Notes (Continued)

NUMA node1 CPU(s): 22-43  
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 rdtscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmpref tsc_known_freq 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 3dnowprefetch cpuid_fault
epb cat_l13 cpd_l3 invpcid_single intel_pinn mba tpr_shadow vnmi flexpriority ept

/vproc/cpuinfo cache data  
cache size : 30976 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 18 19 20 21
node 0 size: 385428 MB  
node 0 free: 383877 MB
node 1 cpus: 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43
node 1 size: 387044 MB
node 1 free: 383566 MB
node distances:
node 0 1
0: 10 21
1: 21 10
```

From /proc/meminfo  
```
MemTotal: 791011860 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

From /etc/*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"
```

(Continued on next page)
Platform Notes (Continued)

uname -a:
    Linux linux-db10 4.12.14-23-default #1 SMP Tue May 29 21:04:44 UTC 2018 (cd0437b)
    x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2017-5754 (Meltdown): Not affected
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted Speculation, IBPB, IBRS_FW

run-level 3 Sep 7 20:47

SPEC is set to: /home/cpu2017
    Filesystem     Type    Size  Used  Avail  Use%  Mounted on
    /dev/sdc2      btrfs    222G  55G  167G  25%  /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,
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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.

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

(Continued on next page)
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Base Portability Flags (Continued)

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 -gopt-prefetch
-ffinite-math-only -gopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP

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

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

Benchmarks using Fortran, C, and C++:
-xCORE-AVX512 -ipo -O3 -no-prec-div -gopt-prefetch
-ffinite-math-only -gopt-mem-layout-trans=4 -qopenmp -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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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU®2017 v1.0.5 on 2019-09-08 02:13:52-0400.
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