Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 5118, 2.30GHz)

| SPECspeed®2017_int_base = 7.62 | SPECspeed®2017_int_peak = 7.81 |

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

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
</table>
| **CPU Name:** Intel Xeon Gold 5118  
**Max MHz:** 3200  
**Nominal:** 2300  
**Enabled:** 24 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:** 16.5 MB I+D on chip per chip  
**Other:** None  
**Memory:** 384 GB (24 x 16 GB 2Rx4 PC4-2666V-R, running at 2400)  
**Storage:** 1 x 240 GB M.2 SATA SSD  
**Other:** None  
| **OS:** SUSE Linux Enterprise Server 12 SP2 (x86_64)  
**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:** 32/64-bit  
**Other:** jemalloc: jemalloc memory allocator library V5.0.1; jemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets; jemalloc: built with the RedHat Enterprise 7.4, and the system compiler gcc 4.8.5; jemalloc: sources available from jemalloc.net or releases  
**Power Management:** -- |
Cisco Systems  
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<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>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>24</td>
<td>335</td>
<td>5.31</td>
<td>330</td>
<td>5.37</td>
<td>334</td>
<td>5.31</td>
<td>24</td>
<td>279</td>
<td>6.37</td>
<td>278</td>
<td>6.38</td>
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<tr>
<td>602.gcc_s</td>
<td>24</td>
<td>487</td>
<td>8.18</td>
<td>486</td>
<td>8.19</td>
<td>484</td>
<td>8.23</td>
<td>24</td>
<td>473</td>
<td>8.42</td>
<td>473</td>
<td>8.42</td>
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<tr>
<td>605.mcf_s</td>
<td>24</td>
<td>472</td>
<td>10.0</td>
<td>471</td>
<td>10.0</td>
<td>472</td>
<td>10.0</td>
<td>24</td>
<td>469</td>
<td>10.1</td>
<td>470</td>
<td>10.0</td>
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<tr>
<td>620.omnetpp_s</td>
<td>24</td>
<td>323</td>
<td>5.06</td>
<td>341</td>
<td>4.78</td>
<td>323</td>
<td>5.06</td>
<td>24</td>
<td>319</td>
<td>5.11</td>
<td>337</td>
<td>4.83</td>
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<tr>
<td>623.xalanchmk_s</td>
<td>24</td>
<td>172</td>
<td>8.24</td>
<td>173</td>
<td>8.20</td>
<td>172</td>
<td>8.22</td>
<td>24</td>
<td>160</td>
<td>8.83</td>
<td>161</td>
<td>8.83</td>
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<tr>
<td>625.x264_s</td>
<td>24</td>
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<td>10.1</td>
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<td>173</td>
<td>10.2</td>
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<td>10.2</td>
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<tr>
<td>631.deepsjeng_s</td>
<td>24</td>
<td>320</td>
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<td>320</td>
<td>4.48</td>
<td>320</td>
<td>4.48</td>
<td>24</td>
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<td>4.45</td>
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<tr>
<td>641.leela_s</td>
<td>24</td>
<td>455</td>
<td>3.75</td>
<td>455</td>
<td>3.75</td>
<td>455</td>
<td>3.75</td>
<td>24</td>
<td>453</td>
<td>3.76</td>
<td>453</td>
<td>3.77</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>24</td>
<td>254</td>
<td>11.6</td>
<td>254</td>
<td>11.6</td>
<td>255</td>
<td>11.5</td>
<td>24</td>
<td>256</td>
<td>11.5</td>
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<td>11.5</td>
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<td>657.xz_s</td>
<td>24</td>
<td>334</td>
<td>18.5</td>
<td>334</td>
<td>18.5</td>
<td>334</td>
<td>18.5</td>
<td>24</td>
<td>331</td>
<td>18.7</td>
<td>332</td>
<td>18.6</td>
</tr>
</tbody>
</table>

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

General Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
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 syncd and cleared with:
sync; echo 3> /proc/sys/vm/drop_caches
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.4, and the system compiler gcc 4.8.5

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

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

### Cisco Systems

Cisco UCS B200 M5 (Intel Xeon Gold 5118, 2.30GHz)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base = 7.62</th>
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**CPU2017 License:** 9019  
**Test Sponsor:** Cisco Systems  
**Tested by:** Cisco Systems

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<tr>
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<td>Sep-2017</td>
</tr>
</tbody>
</table>

### Platform Notes (Continued)

- Patrol Scrub set to Disabled
- Sysinfo program /home/cpu2017/bin/sysinfo
- Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
- running on linux-mys2 Sat Sep 30 14:05:04 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 5118 CPU @ 2.30GHz
- 2 "physical id"s (chips)
- 24 "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 : 12
  - siblings : 12
  - physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
  - physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13

From lscpu:
- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit
- Byte Order: Little Endian
- CPU(s): 24
- On-line CPU(s) list: 0-23
- Thread(s) per core: 1
- Core(s) per socket: 12
- Socket(s): 2
- NUMA node(s): 2
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 85
- Model name: Intel(R) Xeon(R) Gold 5118 CPU @ 2.30GHz
- Stepping: 4
- CPU MHz: 1000.000
- CPU max MHz: 2301.0000
- CPU min MHz: 1000.0000
- BogoMIPS: 4599.98
- Virtualization: VT-x
- L1d cache: 32K
- L1i cache: 32K
- L2 cache: 1024K
- L3 cache: 16896K
- NUMA node0 CPU(s): 0-11
- NUMA node1 CPU(s): 12-23
- Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov

(Continued on next page)
Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 5118, 2.30GHz)

SPECsnoop®2017_int_base = 7.62
SPECsnoop®2017_int_peak = 7.81

Platform Notes (Continued)

pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
lm constant_tsc arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmpref eagerfp pi 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 ida arat epb pln pts dtherm intel_pit
tpr_shadow vmmi 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 xsavec xgetbv1 cqm_llc cqm_occup_llc

/proc/cpuinfo cache data
  cache size : 16896 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
  node 0 size: 192074 MB
  node 0 free: 184403 MB
  node 1 cpus: 12 13 14 15 16 17 18 19 20 21 22 23
  node 1 size: 193504 MB
  node 1 free: 184593 MB
  node distances:
    node 0 1
    0: 10 21
    1: 21 10

From /proc/meminfo
  MemTotal: 394832636 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"

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

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

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 Sep 29 21:24

SPEC is set to: /home/cpu2017

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda3      xfs   182G   47G  135G  26% /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, configured at 2400

(End of data from sysinfo program)

## Compiler Version Notes

```
==============================================================================
<table>
<thead>
<tr>
<th>C</th>
<th>600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>icc (ICC) 18.0.0 20170811</td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2017 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>C++</td>
<td>620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)</td>
</tr>
<tr>
<td>icpc (ICC) 18.0.0 20170811</td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2017 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Fortran</td>
<td>648.exchange2_s(base, peak)</td>
</tr>
<tr>
<td>ifort (IFORT) 18.0.0 20170811</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
</tbody>
</table>

(Continued on next page)```
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Compiler Version Notes (Continued)

Base Compiler Invocation

C benchmarks:
  icc

C++ benchmarks:
  icpc

Fortran benchmarks:
  ifort

Base Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
  -W1,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
  -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
  -L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
  -W1,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
  -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
  -W1,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
  -qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
  -L/usr/local/je5.0.1-64/lib -ljemalloc
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SPEC CPU®2017 Integer Speed Result

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Base Other Flags

C benchmarks:
- m64 -std=c11

C++ benchmarks:
- m64

Fortran benchmarks:
- m64

Peak Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Peak Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -D_FILE_OFFSET_BITS=64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Peak Optimization Flags

C benchmarks:
600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xCORE-AVX512 -qopt-mem-layout-trans=3 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp

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Peak Optimization Flags (Continued)

600.perlbench_s (continued):
-DSPEC_OPENMP -fno-strict-overflow
-\(L/\)usr/\(l\)ocal/je5.0.1-64/lib -ljemalloc

602.gcc_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xCORE-AVX512 -qopt-mem-layout-trans=3 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

605.mcf_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-\(L/\)usr/\(l\)ocal/je5.0.1-64/lib -ljemalloc

625.x264_s: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-\(L/\)usr/\(l\)ocal/je5.0.1-64/lib -ljemalloc

657.xz_s: Same as 602.gcc_s

C++ benchmarks:

620.omnetpp_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-\(L/\)usr/\(l\)ocal/je5.0.1-64/lib -ljemalloc

623.xalancbmk_s: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-\(L/\)usr/\(l\)ocal/je5.0.1-32/lib -ljemalloc

631.deepsjeng_s: Same as 620.omnetpp_s

641.leela_s: Same as 620.omnetpp_s

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-\(L/\)usr/\(l\)ocal/je5.0.1-64/lib -ljemalloc
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Peak Other Flags

C benchmarks:
-m64 -std=c11

C++ benchmarks (except as noted below):
-m64

623.xalancbmk_s: -m32

Fortran benchmarks:
-m64

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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