Cisco Systems
Cisco UCS C220 M5 (Intel Xeon Platinum 8180M, 2.50GHz)

<table>
<thead>
<tr>
<th>Software</th>
<th>SPECspeed®2017_fp_base = 131</th>
<th>SPECspeed®2017_fp_peak = 132</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed®2017_fp_base (131)</th>
<th>SPECspeed®2017_fp_peak (132)</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>56</td>
<td>193</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>56</td>
<td>197</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>56</td>
<td>90.0</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>56</td>
<td>94.5</td>
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<tr>
<td>627.cam4_s</td>
<td>56</td>
<td>110</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>56</td>
<td>63.6</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>56</td>
<td>146</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>56</td>
<td>296</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>56</td>
<td>297</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>56</td>
<td>154</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Software</th>
<th>SPECspeed®2017_fp_base (131)</th>
<th>SPECspeed®2017_fp_peak (132)</th>
</tr>
</thead>
</table>

Hardware
CPU Name: Intel Xeon Platinum 8180M
Max MHz: 3800
Nominal: 2500
Enabled: 56 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: 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 600 GB SAS HDD, 10K 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: Yes
Firmware: Version 3.1.1d released Jun-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 Speed Result**

---

**Cisco Systems**

Cisco UCS C220 M5 (Intel Xeon Platinum 8180M, 2.50GHz)

---

**CPU2017 License:** 9019  
**Test Sponsor:** Cisco Systems  
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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>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<tr>
<td>603.bwaves_s</td>
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<td>121</td>
<td>488</td>
<td>121</td>
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<td>121</td>
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<td>483</td>
<td>122</td>
<td>485</td>
<td>123</td>
<td>482</td>
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<tr>
<td>607.cactuBSSN_s</td>
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<td>86.6</td>
<td>193</td>
<td>85.8</td>
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<td>84.7</td>
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<td>116</td>
<td>45.2</td>
<td>116</td>
<td>45.2</td>
<td>56</td>
<td>116</td>
<td>45.1</td>
<td>116</td>
<td>45.2</td>
<td>116</td>
<td>45.1</td>
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<tr>
<td>621.wrf_s</td>
<td>56</td>
<td>147</td>
<td>90.0</td>
<td>147</td>
<td>90.9</td>
<td>146</td>
<td>90.3</td>
<td>56</td>
<td>139</td>
<td>95.2</td>
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<td>94.5</td>
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<td>110</td>
<td>80.5</td>
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<td>80.5</td>
<td>110</td>
<td>80.7</td>
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<td>81.4</td>
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<td>628.pop2_s</td>
<td>56</td>
<td>192</td>
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<td>190</td>
<td>62.3</td>
<td>186</td>
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<td>96.3</td>
<td>150</td>
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<tr>
<td>644.nab_s</td>
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<td>59.3</td>
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<td>59.0</td>
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<td>58.9</td>
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<td>58.9</td>
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<td>58.9</td>
<td>297</td>
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<td>649.fotonik3d_s</td>
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<td>84.5</td>
<td>108</td>
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<td>110</td>
<td>83.0</td>
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<td>84.0</td>
<td>107</td>
<td>85.2</td>
<td>107</td>
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<tr>
<td>654.roms_s</td>
<td>56</td>
<td>102</td>
<td>154</td>
<td>103</td>
<td>153</td>
<td>103</td>
<td>154</td>
<td>56</td>
<td>99.1</td>
<td>159</td>
<td>99.5</td>
<td>158</td>
<td>99.5</td>
<td>158</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/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

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(Continued on next page)
Cisco Systems
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SPECspeed®2017_fp_base = 131
SPECspeed®2017_fp_peak = 132

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

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

Platform Notes (Continued)

running on linux-3joc Sun Nov 12 15:23:54 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)
  56 "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 : 28
  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
               28 29 30

From lscpu:
  Architecture:          x86_64
  CPU op-mode(s):        32-bit, 64-bit
  Byte Order:            Little Endian
  CPU(s):                56
  On-line CPU(s) list:   0-55
  Thread(s) per core:    1
  Core(s) per socket:    28
  Socket(s):             2
  NUMA node(s):          2
  Vendor ID:             GenuineIntel
  CPU family:            6
  Model:                 85
  Model name:            Intel(R) Xeon(R) Platinum 8180M CPU @ 2.50GHz
  Stepping:              4
  CPU MHz:               2465.058
  CPU max MHz:           3800.0000
  CPU min MHz:           1000.0000
  BogoMIPS:              4988.28
  Virtualization:        VT-x
  L1d cache:             32K
  L1i cache:             32K
  L2 cache:              1024K
  L3 cache:              39424K
  NUMA node0 CPU(s):     0-27
  NUMA node1 CPU(s):     28-55
  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

(Continued on next page)
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Platform Notes (Continued)

lm constant_tsc art arch_perfmon pebs bts rep_good nop1 xtopology nonstop_tsc
aperfmpref eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fma cx16 xtpc pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
xsave avx fl64c rdrand lahf_lm abm 3nowprefetch ida arat epb pln pts dtherm hwp
hwp_act_window hwp_epp hwp_pkg_req intel_pt tpr_shadow vmx f1xprecision ept vpid
fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cgx mp mpx avx512f
avx512dq rdseed adx smap cliflushopt clwb avx512cd avx512sw avx512vl xsaveopt xsavec
xgetbv1 cgx llc cgx_occnp 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: 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 22 23 24 25 26 27
node 0 size: 192091 MB
node 0 free: 189233 MB
node 1 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
53 54 55
node 1 size: 193518 MB
node 1 free: 188147 MB
node distances:
node   0   1
0:  10  21
1:  21  10

From /proc/meminfo
MemTotal: 394864664 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"

(Continued on next page)
**Cisco Systems**  
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| SPECspeed®2017_fp_base | 131  
| SPECspeed®2017_fp_peak | 132  

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| Test Date: | Nov-2017  
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---

**Platform Notes (Continued)**

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

```
uname -a:
Linux linux-3joc 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 Nov 12 10:30
```

**SPEC is set to:** /home/cpu2017

**Filesystem**  
<table>
<thead>
<tr>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda3</td>
<td>xfs</td>
<td>516G</td>
<td>106G</td>
<td>411G</td>
<td>21%</td>
</tr>
</tbody>
</table>

**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. C220M5.3.1.1d.0.0615170645 06/15/2017  
- 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.

```
==============================================================================
```

*(Continued on next page)*
Cisco Systems
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Specspeed®2017_fp_base = 131
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Test Date: Nov-2017
Hardware Availability: Aug-2017
Software Availability: Sep-2017

Compiler Version Notes (Continued)

Fortran

603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak)
654.roms_s(base, peak)

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.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
Cisco Systems
Cisco UCS C220 M5 (Intel Xeon Platinum 8180M, 2.50GHz)

SPEC CPU 2017 Floating Point Speed Result

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Software Availability: Sep-2017

Base Portability Flags (Continued)

654.roms_s: -DSPEC_LP64

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
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Peak 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

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

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

Peak Optimization Flags (Continued)

621.wrf_s (continued):
-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

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.

Tested with SPEC CPU®2017 v1.0.2 on 2017-11-12 18:23:53-0500.
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