## Cisco Systems

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

### SPECfp®2006 Result

<table>
<thead>
<tr>
<th>Test date:</th>
<th>Nov-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
<td>Cisco Systems</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Cisco Systems</td>
</tr>
<tr>
<td>CPU2006 license:</td>
<td>9019</td>
</tr>
<tr>
<td>CPU Name:</td>
<td>Intel Xeon Platinum 8180M</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.80 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2500</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>56 cores, 2 chips, 28 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1.2 chips</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>1 MB I+D on chip per core</td>
</tr>
<tr>
<td>SPECfp®2006 =</td>
<td>156</td>
</tr>
<tr>
<td>SPECfp_base2006 =</td>
<td>149</td>
</tr>
</tbody>
</table>

### Software

- Operating System: SUSE Linux Enterprise Server 12 SP2 (x86_64) 4.4.21-69-default
- Compiler: C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux; Fortran: Version 17.0.3.191 of Intel Fortran Compiler for Linux
- Auto Parallel: Yes
- File System: xfs
- System State: Run level 3 (multi-user)

### Hardware

- 410.bwaves
- 416.gamess
- 433.milc
- 434.zeusmp
- 435.gromacs
- 436.cactusADM
- 437.leslie3d
- 444.namd
- 447.dealII
- 450.soplex
- 453.povray
- 454.calculix
- 459.GemsFDTD
- 465.tonto
- 470.lbm
- 481.wrf
- 482.sphinx3
Cisco Systems
Cisco UCS C220 M5 (Intel Xeon Platinum 8180M, 2.50GHz)

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**SPEC CFP2006 Result**

**SPECfp2006 =** 156
**SPECfp_base2006 =** 149

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**CPU2006 license:** 9019
**Test sponsor:** Cisco Systems
**Tested by:** Cisco Systems

**L3 Cache:** 38.5 MB I+D on chip per chip
**Other Cache:** None
**Memory:** 384 GB (24 x 16 GB 2Rx4 PC4-2666V-R)
**Disk Subsystem:** 1 x 600 GB SAS HDD, 10K RPM
**Other Hardware:** None

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**Results Table**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>12.0</td>
<td>1130</td>
<td>11.9</td>
<td>1150</td>
<td>12.0</td>
<td>1130</td>
<td>12.0</td>
<td>1130</td>
<td>11.9</td>
<td>1150</td>
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<tr>
<td>416.gamess</td>
<td>402</td>
<td>48.7</td>
<td>403</td>
<td>48.6</td>
<td>406</td>
<td>48.3</td>
<td>374</td>
<td>52.4</td>
<td>375</td>
<td>52.2</td>
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<tr>
<td>433.milc</td>
<td>114</td>
<td>80.7</td>
<td>115</td>
<td>79.9</td>
<td>113</td>
<td>81.3</td>
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<td>80.7</td>
<td>115</td>
<td>79.9</td>
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<td>434.zeusmp</td>
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<td>286</td>
<td>32.3</td>
<td>282</td>
<td>32.1</td>
<td>283</td>
<td>31.8</td>
<td>286</td>
<td>32.3</td>
<td>282</td>
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<tr>
<td>435.gromacs</td>
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<td>52.4</td>
<td>136</td>
<td>52.6</td>
<td>136</td>
<td>52.5</td>
<td>136</td>
<td>52.6</td>
<td>136</td>
<td>52.5</td>
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<tr>
<td>437.leslie3d</td>
<td>18.1</td>
<td>520</td>
<td>18.2</td>
<td>515</td>
<td>18.1</td>
<td>519</td>
<td>18.1</td>
<td>520</td>
<td>18.2</td>
<td>515</td>
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<td>444.namd</td>
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<td>219</td>
<td>36.6</td>
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<td>36.6</td>
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<td>37.4</td>
<td>214</td>
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<td>447.dealII</td>
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<td>453.povray</td>
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<td>73.4</td>
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<td>73.5</td>
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<td>77.8</td>
<td>107</td>
<td>77.4</td>
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<tr>
<td>459.GemsFDTD</td>
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<td>39.4</td>
<td>269</td>
<td>40.0</td>
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<td>50.5</td>
<td>195</td>
<td>50.5</td>
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<td>149</td>
<td>66.2</td>
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<td>470.libm</td>
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<td>1720</td>
<td>7.98</td>
<td>1720</td>
<td>8.05</td>
<td>1710</td>
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<td>1720</td>
<td>7.98</td>
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<td>481.wrf</td>
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<td>81.7</td>
<td>137</td>
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<td>482.sphinx3</td>
<td>278</td>
<td>70.1</td>
<td>276</td>
<td>70.7</td>
<td>270</td>
<td>72.2</td>
<td>278</td>
<td>70.1</td>
<td>276</td>
<td>70.7</td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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**Operating System Notes**

Stack size set to unlimited using "ulimit -s unlimited"

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**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/cpu2006-1.2/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-3joc Sun Nov 12 19:05:51 2017

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

SPECfp2006 = 156
SPECfp_base2006 = 149

CPU2006 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems

Software Availability: Apr-2017
Hardware Availability: Aug-2017
Test date: Nov-2017

Platform Notes (Continued)

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
http://www.spec.org/cpu2006/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
  cache size : 39424 KB

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:
  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-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/cpu2006-1.2

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Cisco Systems
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SPECfp2006 = 156
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Platform Notes (Continued)

Filesystem     Type  Size  Used  Avail  Use% Mounted on
/dev/sda3      xfs   516G  112G  404G  22%  /home
Additional information from dmidecode:

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 MHz

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2006-1.2/lib/ia32:/home/cpu2006-1.2/lib/intel64:/home/cpu2006-1.2/sh10.2"
OMP_NUM_THREADS = "56"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled

Base Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
icc -m64 ifort -m64

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64

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Base Portability Flags (Continued)

434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

Peak Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
icc -m64 ifort -m64
Cisco Systems
Cisco UCS C220 M5 (Intel Xeon Platinum 8180M, 2.50GHz)

SPECfp2006 = 156
SPECfp_base2006 = 149

CPU2006 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems

Test date: Nov-2017
Hardware Availability: Aug-2017
Software Availability: Apr-2017

Peak Portability Flags
Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes
470.lbm: basepeak = yes
482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -fno-alias -auto-ilp32

447.dealII: basepeak = yes
450.soplex: basepeak = yes

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes
416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll2 -inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll2 -inline-level=0 -qopt-prefetch -parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -inline-calloc -qopt-malloc-options=3
-auto -unroll4

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| SPECfp2006 | 156 |
| SPECfp_base2006 | 149 |

CPU2006 license: 9019
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Hardware Availability: Aug-2017
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**Peak Optimization Flags (Continued)**

Benmarks using both Fortran and C:

- 435.gromacs: basepeak = yes
- 436.cactusADM: basepeak = yes
- 454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32
- 481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.html
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revH.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revH.xml

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