## SPEC® CFP2006 Result

**Cisco Systems**

Cisco UCS C480 M5 (Intel Xeon Gold 6146 3.20GHz)

<table>
<thead>
<tr>
<th>Program</th>
<th>SPECfp2006</th>
<th>SPECfp_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>56.2</td>
<td>60.4</td>
</tr>
<tr>
<td>416.gamess</td>
<td>52.8</td>
<td>1420</td>
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<td>436.cactusADM</td>
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<td>437.leslie3d</td>
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<td>444.namd</td>
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<td>447.dealII</td>
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<td>450.soplex</td>
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<td>465.tonto</td>
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<td>481.wrf</td>
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<td></td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>79.9</td>
<td></td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon Gold 6146
- **CPU Characteristics:** Intel Turbo Boost Technology up to 4.20 GHz
- **CPU MHz:** 3200
- **FPU:** Integrated
- **CPU(s) enabled:** 48 cores, 4 chips, 12 cores/chip
- **CPU(s) orderable:** 2.4 chips
- **Primary Cache:** 32 KB L1 + 32 KB D on chip per core
- **Secondary Cache:** 1 MB I+D on chip per core

**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)
## SPEC CFP2006 Result

### Cisco Systems

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<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
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<td>79.9</td>
<td>245</td>
<td>79.5</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 "ulimit -s unlimited"

### 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 (b5e8d4d4eb51ed28d7f98696cbe290c1)
running on linux-g83b Sat Aug 19 22:55:52 2017

Continued on next page
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) Gold 6146 CPU @ 3.20GHz
4 "physical id"s (chips)
48 "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 9 10 16 18 19 25 26
physical 1: cores 0 1 2 3 4 9 10 16 18 19 25 26
physical 2: cores 0 1 2 3 4 8 9 11 17 18 19 20
physical 3: cores 0 1 2 3 8 9 10 11 18 19 24 27
cache size : 25344 KB

From /proc/meminfo
MemTotal:       1583705808 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-g83b 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 Aug 19 22:15

SPEC is set to: /home/cpu2006-1.2
Filesystem   Type  Size  Used  Avail  Use%  Mounted on
/dev/sdb7    xfs  416G  22G  394G  6%  /home
Additional information from dmidecode:
Continued on next page
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SPECfp2006 = 158
SPECfp_base2006 = 152

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

Platform Notes (Continued)

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. C480M5.3.1.0.245.0514171056 05/14/2017
Memory: 48x 0xCE00 M393A4K40BB2-CTD 32 GB 2 rank 2666 MHz

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 = "48"

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
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main

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Cisco Systems
Cisco UCS C480 M5 (Intel Xeon Gold 6146 3.20GHz)

SPECfp2006 = 158
SPECfp_base2006 = 152

CPU2006 license: 9019
Test sponsor: Cisco Systems
Test date: Aug-2017
Tested by: Cisco Systems
Hardware Availability: Aug-2017
Software Availability: Apr-2017

Base Portability Flags (Continued)
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
470.lbm: -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

Peak Portability Flags
Same as Base Portability Flags
Cisco Systems
Cisco UCS C480 M5 (Intel Xeon Gold 6146 3.20GHz)

SPECfp2006 = 158
SPECfp_base2006 = 152

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

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

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) -unroll14 -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

Benchmarks using both Fortran and C:
- 435.gromacs: basepeak = yes
- 436.cactusADM: basepeak = yes

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| SPECfp2006 = | 158 |
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CPU2006 license: 9019
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Test date: Aug-2017
Hardware Availability: Aug-2017
Software Availability: Apr-2017

Peak Optimization Flags (Continued)

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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For other inquiries, please contact webmaster@spec.org.

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