



# SPEC® CFP2006 Result

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## Cisco Systems

Cisco UCS C220 M5 (Intel Xeon Gold 6144, 3.50GHz)

**SPECfp®2006 = 153**

**SPECfp\_base2006 = 149**

CPU2006 license: 9019

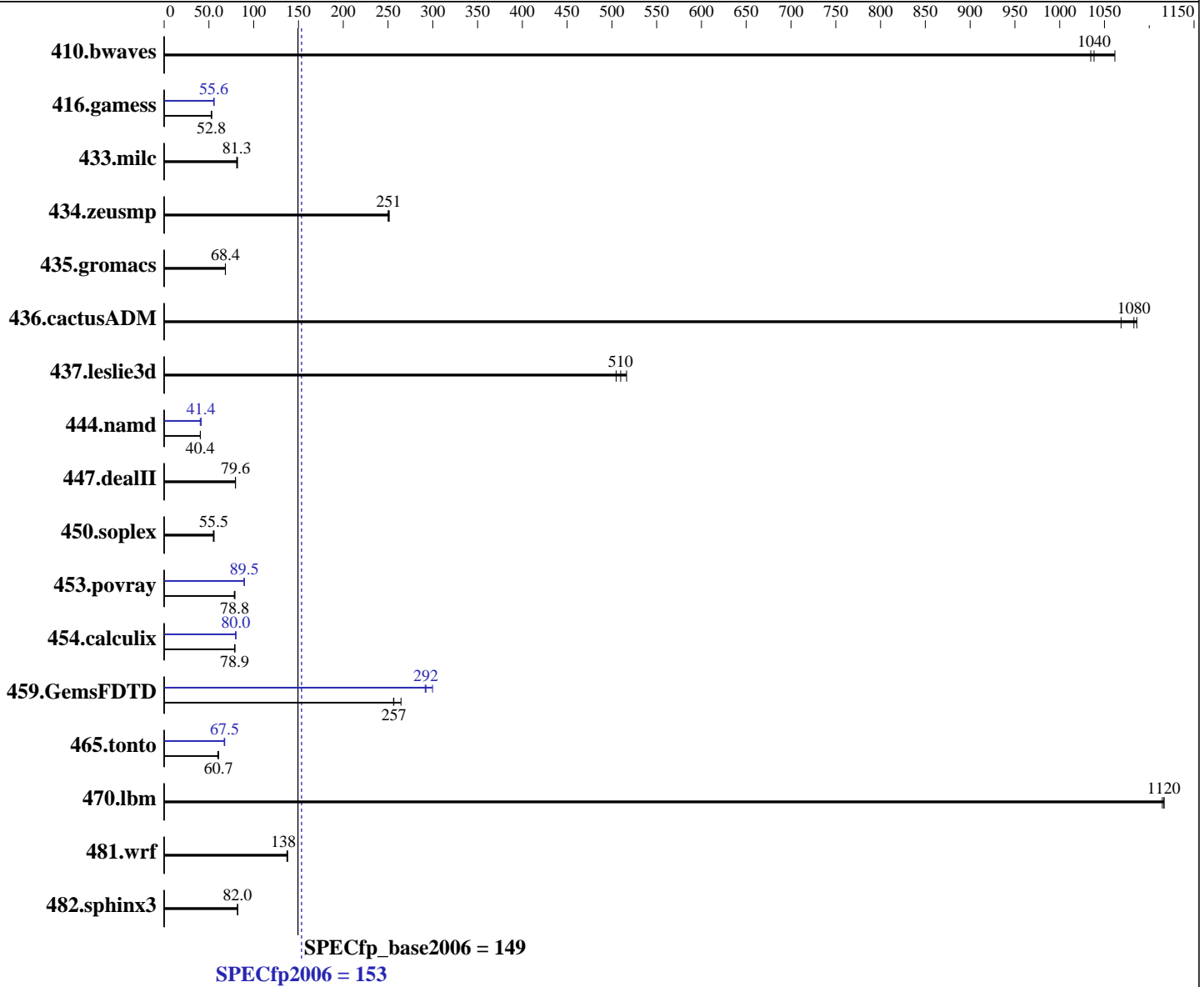
Test sponsor: Cisco Systems

Tested by: Cisco Systems

Test date: Aug-2017

Hardware Availability: Aug-2017

Software Availability: Apr-2017



Hardware	
CPU Name:	Intel Xeon Gold 6144
CPU Characteristics:	Intel Turbo Boost Technology up to 4.20 GHz
CPU MHz:	3500
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 cores/chip
CPU(s) orderable:	1,2 chips
Primary Cache:	32 KB I + 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)

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L3 Cache: 24.75 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 SSD SAS  
Other Hardware: None

Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other Software: None

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	13.1	1030	<b><u>13.1</u></b>	<b><u>1040</u></b>	12.8	1060	13.1	1030	<b><u>13.1</u></b>	<b><u>1040</u></b>	12.8	1060
416.gamess	369	53.1	371	52.8	<b><u>371</u></b>	<b><u>52.8</u></b>	352	55.5	<b><u>352</u></b>	<b><u>55.6</u></b>	351	55.8
433.milc	113	81.0	<b><u>113</u></b>	<b><u>81.3</u></b>	112	82.0	113	81.0	<b><u>113</u></b>	<b><u>81.3</u></b>	112	82.0
434.zeusmp	36.2	251	36.4	250	<b><u>36.3</u></b>	<b><u>251</u></b>	36.2	251	36.4	250	<b><u>36.3</u></b>	<b><u>251</u></b>
435.gromacs	105	68.3	104	68.4	<b><u>104</u></b>	<b><u>68.4</u></b>	105	68.3	104	68.4	<b><u>104</u></b>	<b><u>68.4</u></b>
436.cactusADM	<b><u>11.0</u></b>	<b><u>1080</u></b>	11.2	1070	11.0	1090	<b><u>11.0</u></b>	<b><u>1080</u></b>	11.2	1070	11.0	1090
437.leslie3d	<b><u>18.4</u></b>	<b><u>510</u></b>	18.6	505	18.2	516	<b><u>18.4</u></b>	<b><u>510</u></b>	18.6	505	18.2	516
444.namd	198	40.4	198	40.4	<b><u>198</u></b>	<b><u>40.4</u></b>	199	40.3	<b><u>194</u></b>	<b><u>41.4</u></b>	194	41.4
447.dealII	144	79.6	<b><u>144</u></b>	<b><u>79.6</u></b>	144	79.7	144	79.6	<b><u>144</u></b>	<b><u>79.6</u></b>	144	79.7
450.soplex	<b><u>150</u></b>	<b><u>55.5</u></b>	152	54.9	150	55.7	<b><u>150</u></b>	<b><u>55.5</u></b>	152	54.9	150	55.7
453.povray	67.9	78.3	67.3	79.0	<b><u>67.5</u></b>	<b><u>78.8</u></b>	59.6	89.3	59.4	89.5	<b><u>59.5</u></b>	<b><u>89.5</u></b>
454.calculix	<b><u>105</u></b>	<b><u>78.9</u></b>	105	78.8	104	79.0	<b><u>103</u></b>	<b><u>80.0</u></b>	103	80.1	103	79.9
459.GemsFDTD	40.1	265	<b><u>41.4</u></b>	<b><u>257</u></b>	41.4	256	36.4	292	<b><u>36.3</u></b>	<b><u>292</u></b>	35.4	300
465.tonto	164	59.8	<b><u>162</u></b>	<b><u>60.7</u></b>	162	60.8	146	67.6	<b><u>146</u></b>	<b><u>67.5</u></b>	147	67.1
470.lbm	<b><u>12.3</u></b>	<b><u>1120</u></b>	12.3	1120	12.3	1110	<b><u>12.3</u></b>	<b><u>1120</u></b>	12.3	1120	12.3	1110
481.wrf	81.0	138	81.5	137	<b><u>81.1</u></b>	<b><u>138</u></b>	81.0	138	81.5	137	<b><u>81.1</u></b>	<b><u>138</u></b>
482.sphinx3	237	82.1	<b><u>238</u></b>	<b><u>82.0</u></b>	238	82.0	237	82.1	<b><u>238</u></b>	<b><u>82.0</u></b>	238	82.0

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 (b5e8d4b4eb51ed28d7f98696cbe290c1)  
running on linux-0fck Sat Aug 12 07:03:24 2017

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Hardware Availability: Aug-2017

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## 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 6144 CPU @ 3.50GHz
 2 "physical id"s (chips)
 16 "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 : 8
  siblings  : 8
  physical 0: cores 0 2 3 9 16 19 26 27
  physical 1: cores 0 2 3 9 16 19 26 27
 cache size : 25344 KB

```

```

From /proc/meminfo
MemTotal:      394864988 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-0fck 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 12 06:57

```

SPEC is set to: /home/cpu2006-1.2
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       xfs   500G   39G  462G   8% /

```

Additional information from dmidecode:

Warning: Use caution when you interpret this section. The 'dmidecode' program  
Continued on next page



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### Platform Notes (Continued)

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 = "16"

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

437.leslie3d: -DSPEC\_CPU\_LP64

444.namd: -DSPEC\_CPU\_LP64

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## Base Portability Flags (Continued)

```

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



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## 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

### Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

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## 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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Tested with SPEC CPU2006 v1.2.

Report generated on Wed Sep 6 11:46:48 2017 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 5 September 2017.