SPEC® CFP2006 Result

Cisco Systems

$SPECfp^{®}2006 =$ 147

Cisco UCS C480 M5 (Intel Xeon Platinum 8160M, 2.10GHz)

$SPECfp\_base2006 =$ 140

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

Benchmark	Result
410.bwaves	1650
416.gamess	51.6 / 48.1
433.milc	78.2
434.zeusmp	179
435.gromacs	44.0
436.cactusADM	1380
437.leslie3d	386
444.namd	36.6 / 35.7
447.dealII	73.1
450.soplex	52.9
453.povray	79.1 / 69.8
454.calculix	77.0 / 71.5
459.GemsFDTD	150 / 136
465.tonto	66.5 / 42.7
470.lbm	3280
481.wrf	130
482.sphinx3	65.9

SPECfp_base2006 = 140

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Hardware

CPU Name:	Intel Xeon Platinum 8160M
CPU Characteristics:	Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz:	2100
FPU:	Integrated
CPU(s) enabled:	96 cores, 4 chips, 24 cores/chip
CPU(s) orderable:	2,4 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core

Continued on next page

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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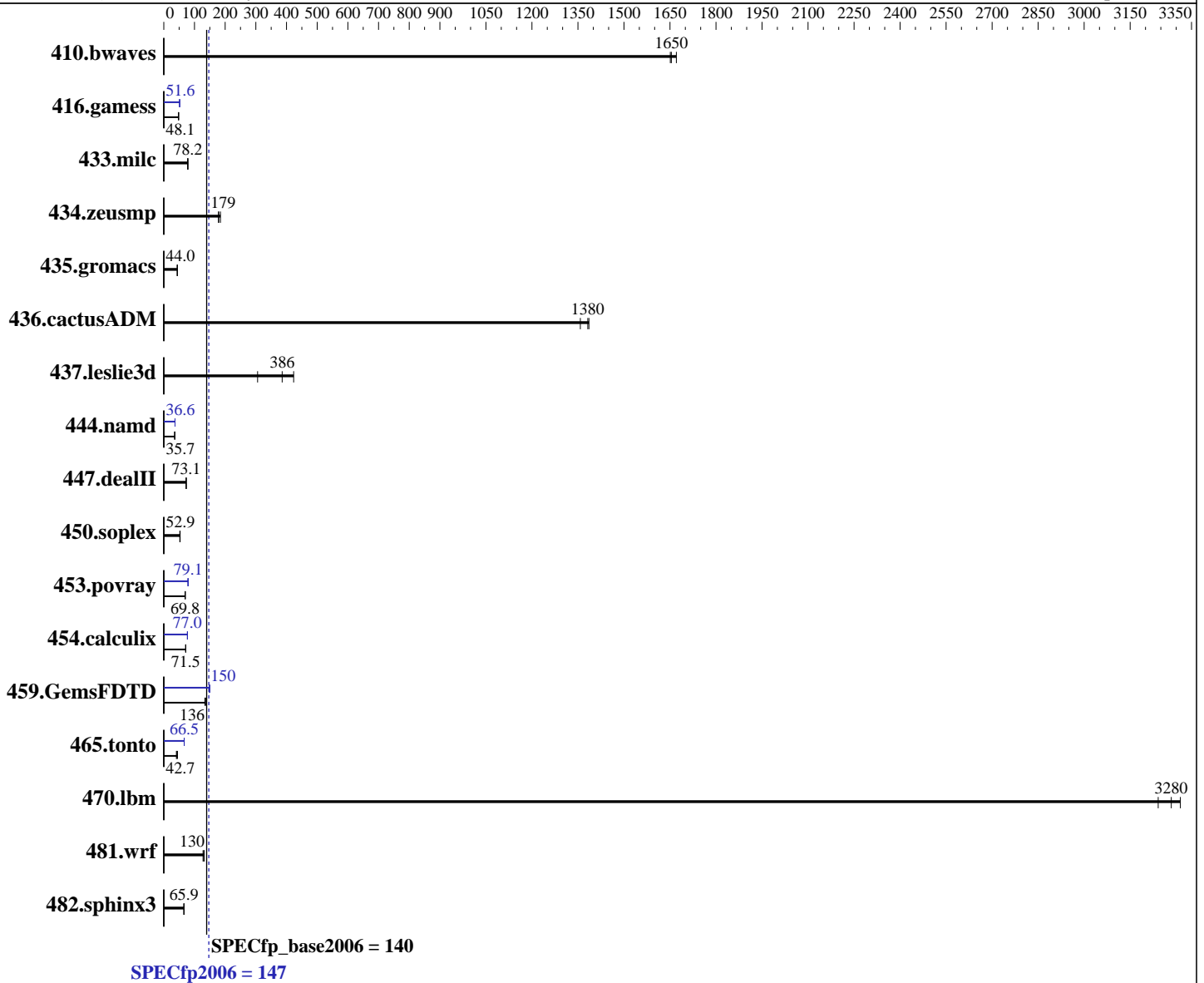| SPECfp2006 =	147
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L3 Cache:	33 MB I+D on chip per chip
Other Cache:	None
Memory:	768 GB (48 x 16 GB 2Rx4 PC4-2666V-R)
Disk Subsystem:	1 x 1 TB SAS HDD, 7.2K RPM
Other Hardware:	None

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	**8.21**	**1650**	8.13	1670	8.23	1650	**8.21**	**1650**	8.13	1670	8.23	1650
416.gamess	406	48.2	407	48.1	**407**	**48.1**	**379**	**51.6**	379	51.7	381	51.4
433.milc	118	77.6	**117**	**78.2**	116	78.9	118	77.6	**117**	**78.2**	116	78.9
434.zeusmp	**50.8**	**179**	51.1	178	49.3	185	**50.8**	**179**	51.1	178	49.3	185
435.gromacs	163	43.7	161	44.3	**162**	**44.0**	163	43.7	161	44.3	**162**	**44.0**
436.cactusADM	8.80	1360	8.62	1390	**8.65**	**1380**	8.80	1360	8.62	1390	**8.65**	**1380**
437.leslie3d	30.7	306	22.2	423	**24.4**	**386**	30.7	306	22.2	423	**24.4**	**386**
444.namd	**225**	**35.7**	225	35.7	225	35.7	**219**	**36.6**	219	36.5	219	36.6
447.dealII	157	73.1	157	72.8	**157**	**73.1**	157	73.1	157	72.8	**157**	**73.1**
450.soplex	157	53.2	160	52.2	**158**	**52.9**	157	53.2	160	52.2	**158**	**52.9**
453.povray	**76.3**	**69.8**	76.3	69.8	76.3	69.7	67.4	78.9	**67.2**	**79.1**	67.2	79.2
454.calculix	115	71.5	**115**	**71.5**	116	71.4	107	77.2	107	76.9	**107**	**77.0**
459.GemsFDTD	**78.3**	**136**	79.2	134	78.1	136	71.5	148	70.8	150	**70.9**	**150**
465.tonto	**231**	**42.7**	221	44.6	240	41.0	**148**	**66.5**	148	66.4	148	66.6
470.lbm	**4.18**	**3280**	4.24	3240	4.15	3310	**4.18**	**3280**	4.24	3240	4.15	3310
481.wrf	84.7	132	**85.7**	**130**	87.4	128	84.7	132	**85.7**	**130**	87.4	128
482.sphinx3	**296**	**65.9**	298	65.3	296	65.9	**296**	**65.9**	298	65.3	296	65.9

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-p0v5 Wed Sep 13 20:01:03 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) Platinum 8160M CPU @ 2.10GHz
      4 "physical id"s (chips)
      96 "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 : 24
      siblings  : 24
      physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
      27 28 29
      physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
      27 28 29
      physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
      27 28 29
      physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
      27 28 29
   cache size : 33792 KB

From /proc/meminfo
   MemTotal:       791193000 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-p0v5 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 13 19:56
```

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SPECfp2006 =   147

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CPU2006 license: 9019
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Tested by: Cisco Systems

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

Platform Notes (Continued)

```
 SPEC is set to: /home/cpu2006-1.2
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda1       xfs   930G   12G  919G   2% /
 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. C480M5.3.1.0.248.0518171057 05/18/2017
  Memory:
   48x 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 = "96"

 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

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Base Portability Flags (Continued)

```
      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
     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
```

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Cisco UCS C480 M5 (Intel Xeon Platinum 8160M, 2.10GHz)

$SPECfp2006 =$ 147

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

Test date: Sep-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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CPU2006 license: 9019	**Test date:** Sep-2017
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Peak Optimization Flags (Continued)

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

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