



SPEC® CFP2006 Result

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Cisco Systems

Cisco UCS C240 M5 (Intel Xeon Gold 6148, 2.40GHz)

SPECfp®2006 = 148

SPECfp_base2006 = 141

CPU2006 license: 9019

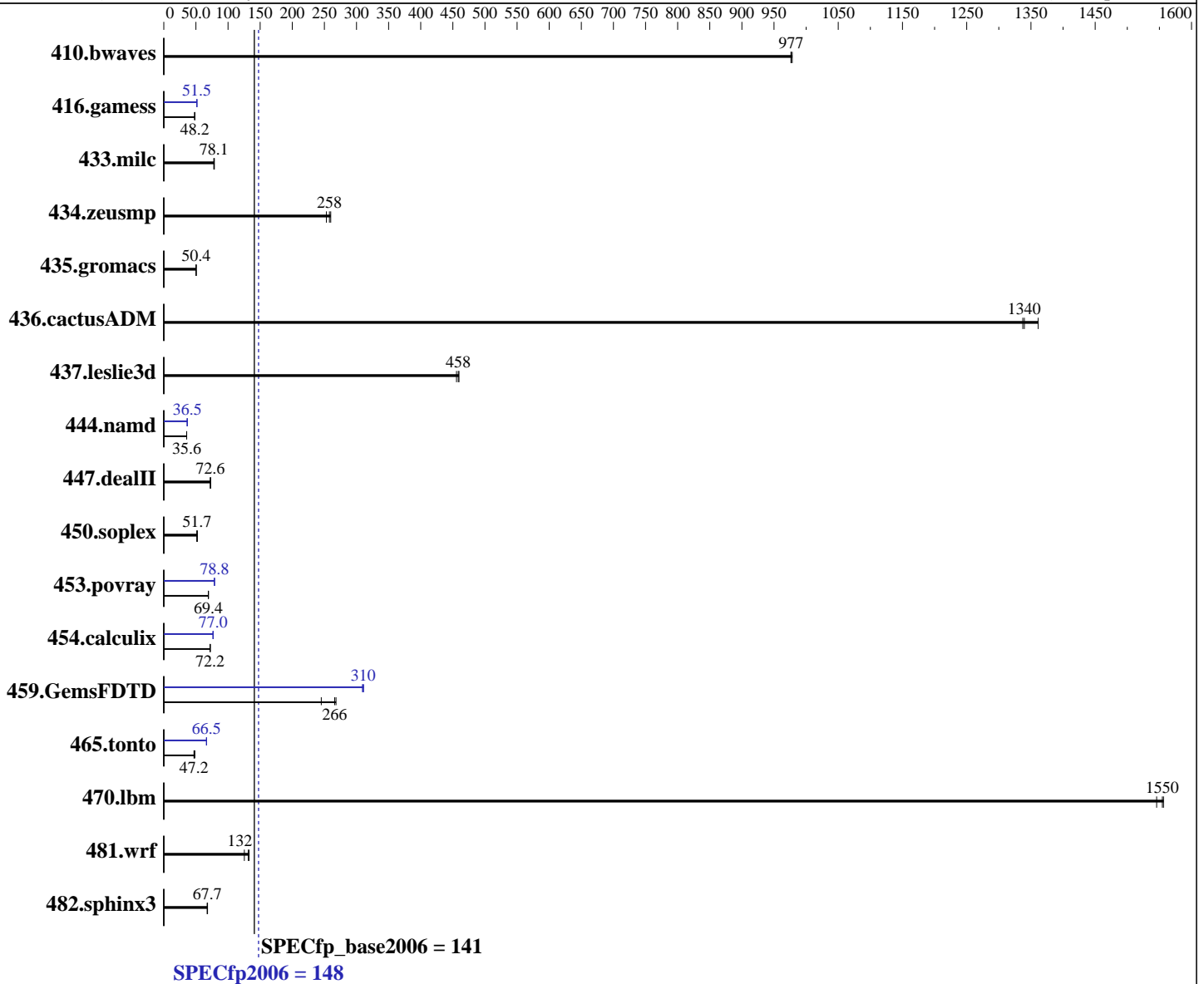
Test sponsor: Cisco Systems

Tested by: Cisco Systems

Test date: Aug-2017

Hardware Availability: Aug-2017

Software Availability: Apr-2017



Hardware

CPU Name: Intel Xeon Gold 6148
 CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
 CPU MHz: 2400
 FPU: Integrated
 CPU(s) enabled: 40 cores, 2 chips, 20 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

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)

Continued on next page



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L3 Cache: 27.5 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 400 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	13.9	978	<u>13.9</u>	<u>977</u>	13.9	976	13.9	978	<u>13.9</u>	<u>977</u>	13.9	976
416.gamess	407	48.1	<u>406</u>	<u>48.2</u>	406	48.2	380	51.5	<u>380</u>	<u>51.5</u>	380	51.6
433.milc	117	78.7	<u>117</u>	<u>78.1</u>	118	78.0	117	78.7	<u>117</u>	<u>78.1</u>	118	78.0
434.zeusmp	<u>35.3</u>	<u>258</u>	35.0	260	35.9	253	<u>35.3</u>	<u>258</u>	35.0	260	35.9	253
435.gromacs	142	50.2	141	50.5	<u>142</u>	<u>50.4</u>	142	50.2	141	50.5	<u>142</u>	<u>50.4</u>
436.cactusADM	8.78	1360	8.94	1340	<u>8.92</u>	<u>1340</u>	8.78	1360	8.94	1340	<u>8.92</u>	<u>1340</u>
437.leslie3d	20.6	456	20.5	460	<u>20.5</u>	<u>458</u>	20.6	456	20.5	460	<u>20.5</u>	<u>458</u>
444.namd	<u>225</u>	<u>35.6</u>	225	35.6	225	35.6	220	36.5	<u>220</u>	<u>36.5</u>	220	36.5
447.dealII	157	72.8	158	72.5	<u>158</u>	<u>72.6</u>	157	72.8	158	72.5	<u>158</u>	<u>72.6</u>
450.soplex	160	52.2	<u>161</u>	<u>51.7</u>	162	51.4	160	52.2	<u>161</u>	<u>51.7</u>	162	51.4
453.povray	76.5	69.5	<u>76.7</u>	<u>69.4</u>	76.8	69.3	<u>67.5</u>	<u>78.8</u>	67.4	78.9	67.5	78.8
454.calculix	114	72.3	<u>114</u>	<u>72.2</u>	114	72.1	<u>107</u>	<u>77.0</u>	108	76.3	107	77.0
459.GemsFDTD	39.6	268	43.3	245	<u>39.9</u>	<u>266</u>	34.3	309	34.1	311	<u>34.2</u>	<u>310</u>
465.tonto	<u>208</u>	<u>47.2</u>	209	47.0	203	48.4	<u>148</u>	<u>66.5</u>	148	66.4	148	66.6
470.lbm	8.83	1560	<u>8.84</u>	<u>1550</u>	8.89	1550	8.83	1560	<u>8.84</u>	<u>1550</u>	8.89	1550
481.wrf	84.1	133	<u>84.9</u>	<u>132</u>	89.1	125	84.1	133	<u>84.9</u>	<u>132</u>	89.1	125
482.sphinx3	<u>288</u>	<u>67.7</u>	286	68.1	288	67.6	<u>288</u>	<u>67.7</u>	286	68.1	288	67.6

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-sca0 Tue Aug 15 07:06:18 2017

Continued on next page



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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 6148 CPU @ 2.40GHz
 2 "physical id"s (chips)
 40 "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    : 20
  siblings     : 20
  physical 0:  cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
  physical 1:  cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
cache size     : 28160 KB

```

From /proc/meminfo

```

MemTotal:      394653448 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"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp2"

```

uname -a:

```

Linux linux-sca0 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 15 07:03

SPEC is set to: /home/cpu2006-1.2

```

Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/sdb3       xfs       237G  13G  224G   6% /home

```

Continued on next page



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Platform Notes (Continued)

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. C240M5.3.1.1d.0.0615170707 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 = "40"

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

Continued on next page

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Page 4



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Base Portability Flags (Continued)

```

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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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

Continued on next page



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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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