



# SPEC® CFP2006 Result

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## Cisco Systems

Cisco UCS C240 M4 (Intel Xeon E5-2680 v3 @ 2.50GHz)

SPECfp®2006 = 111

SPECfp\_base2006 = 107

CPU2006 license: 9019

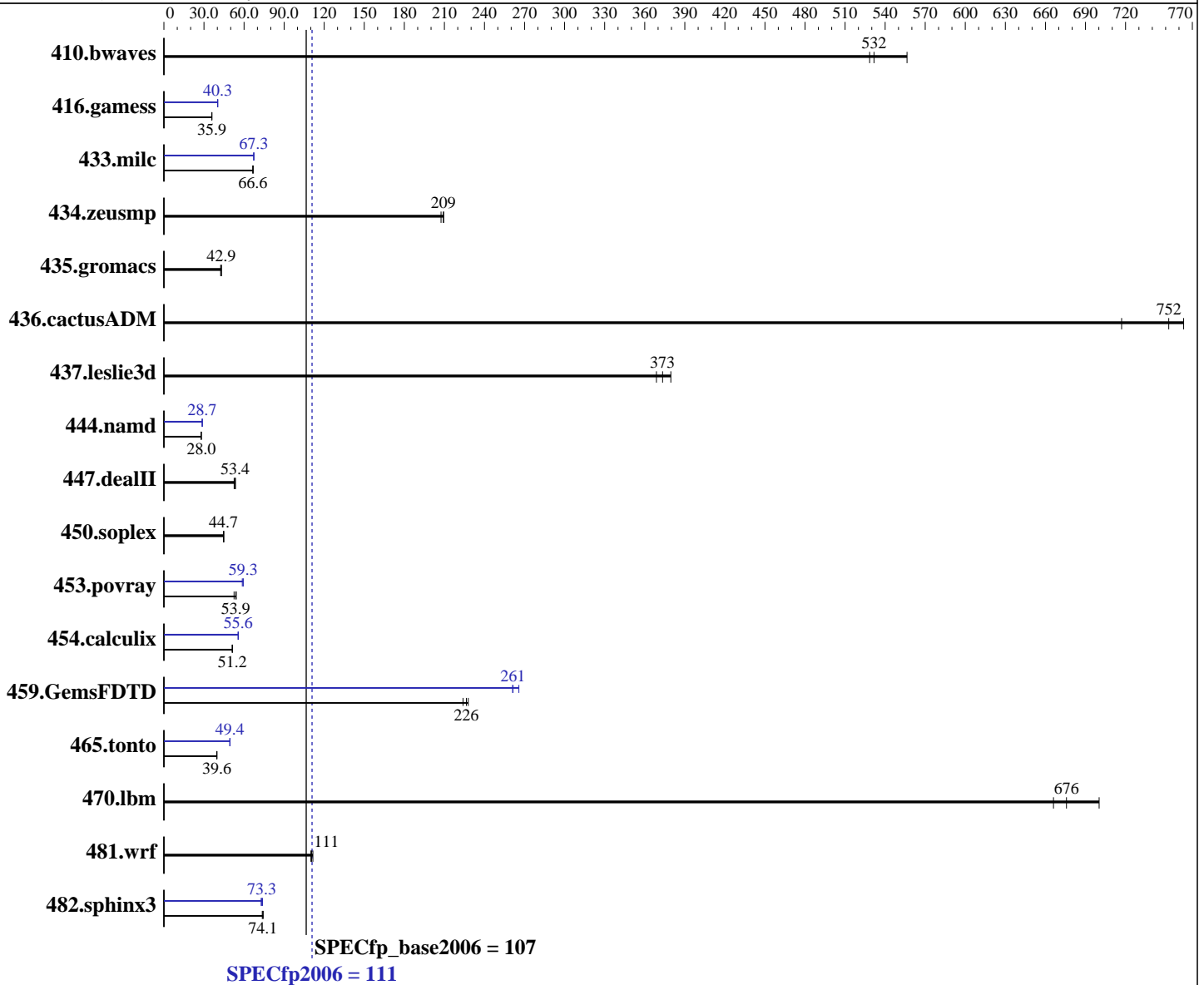
Test sponsor: Cisco Systems

Tested by: Cisco Systems

Test date: Dec-2014

Hardware Availability: Sep-2014

Software Availability: Jul-2014



### Hardware

CPU Name: Intel Xeon E5-2680 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz  
 CPU MHz: 2500  
 FPU: Integrated  
 CPU(s) enabled: 24 cores, 2 chips, 12 cores/chip  
 CPU(s) orderable: 1,2 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core

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### Software

Operating System: Red Hat Enterprise Linux Server release 7.0 (Maipo)  
 3.10.0-123.el7.x86\_64  
 Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux;  
 Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: xfs

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L3 Cache: 30 MB I+D on chip per chip  
Other Cache: None  
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)  
Disk Subsystem: 1 x 300GB SAS, 15K RPM  
Other Hardware: None

System State: Run level 3 (multi-user)  
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	<b><u>25.6</u></b>	<b><u>532</u></b>	24.4	556	25.7	528	<b><u>25.6</u></b>	<b><u>532</u></b>	24.4	556	25.7	528
416.gamess	545	36.0	<b><u>546</u></b>	<b><u>35.9</u></b>	546	35.9	486	40.3	<b><u>486</u></b>	<b><u>40.3</u></b>	486	40.3
433.milc	138	66.5	<b><u>138</u></b>	<b><u>66.6</u></b>	137	66.8	136	67.4	137	67.3	<b><u>136</u></b>	<b><u>67.3</u></b>
434.zeusmp	43.9	207	43.4	209	<b><u>43.5</u></b>	<b><u>209</u></b>	43.9	207	43.4	209	<b><u>43.5</u></b>	<b><u>209</u></b>
435.gromacs	<b><u>166</u></b>	<b><u>42.9</u></b>	168	42.5	166	43.1	<b><u>166</u></b>	<b><u>42.9</u></b>	168	42.5	166	43.1
436.cactusADM	16.7	717	15.7	763	<b><u>15.9</u></b>	<b><u>752</u></b>	16.7	717	15.7	763	<b><u>15.9</u></b>	<b><u>752</u></b>
437.leslie3d	<b><u>25.2</u></b>	<b><u>373</u></b>	24.8	380	25.5	369	<b><u>25.2</u></b>	<b><u>373</u></b>	24.8	380	25.5	369
444.namd	287	28.0	287	27.9	<b><u>287</u></b>	<b><u>28.0</u></b>	279	28.7	<b><u>279</u></b>	<b><u>28.7</u></b>	280	28.7
447.dealII	218	52.6	<b><u>214</u></b>	<b><u>53.4</u></b>	214	53.5	218	52.6	<b><u>214</u></b>	<b><u>53.4</u></b>	214	53.5
450.soplex	186	44.8	<b><u>186</u></b>	<b><u>44.7</u></b>	187	44.7	186	44.8	<b><u>186</u></b>	<b><u>44.7</u></b>	187	44.7
453.povray	101	52.5	<b><u>98.8</u></b>	<b><u>53.9</u></b>	98.2	54.2	90.7	58.7	89.6	59.4	<b><u>89.7</u></b>	<b><u>59.3</u></b>
454.calculix	<b><u>161</u></b>	<b><u>51.2</u></b>	161	51.3	161	51.2	<b><u>148</u></b>	<b><u>55.6</u></b>	148	55.6	148	55.7
459.GemsFDTD	47.4	224	<b><u>46.9</u></b>	<b><u>226</u></b>	46.6	228	40.6	261	<b><u>40.6</u></b>	<b><u>261</u></b>	39.9	266
465.tonto	<b><u>249</u></b>	<b><u>39.6</u></b>	247	39.8	249	39.5	199	49.5	199	49.4	<b><u>199</u></b>	<b><u>49.4</u></b>
470.lbm	<b><u>20.3</u></b>	<b><u>676</u></b>	19.6	700	20.6	666	<b><u>20.3</u></b>	<b><u>676</u></b>	19.6	700	20.6	666
481.wrf	101	110	<b><u>101</u></b>	<b><u>111</u></b>	100	112	101	110	<b><u>101</u></b>	<b><u>111</u></b>	100	112
482.sphinx3	<b><u>263</u></b>	<b><u>74.1</u></b>	265	73.6	262	74.3	<b><u>266</u></b>	<b><u>73.3</u></b>	268	72.8	264	73.8

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

CPU performance set to HPC  
Power Technology set to Custom  
Processor Power State C6 set to Disabled  
Energy Performance BIAS setting set to Performance  
Memory RAS configuration set to Maximum Performance  
Snoop Mode set to Home Snoop  
Intel Hyper-Threading Technology option set to Disabled  
Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6914  
\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1  
running on localhost.localdomain Fri Dec 19 04:55:17 2014

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Hardware Availability: Sep-2014

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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) CPU E5-2680 v3 @ 2.50GHz
 2 "physical id"s (chips)
 24 "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 5 8 9 10 11 12 13
physical 1:    : cores 0 1 2 3 4 5 8 9 10 11 12 13
cache size     : 30720 KB
```

From /proc/meminfo

```
MemTotal:      263706176 kB
HugePages_Total: 0
Hugepagesize:  2048 kB
```

From /etc/\*release\* /etc/\*version\*

```
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.0 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.0"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server
```

uname -a:

```
Linux localhost.localdomain 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57 EDT 2014 x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3 Dec 18 22:37

SPEC is set to: /opt/cpu2006-1.2

```
Filesystem      Type      Size      Used Avail Use% Mounted on
/dev/sdal        xfs       350G      23G  328G   7% /
```

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.

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## Platform Notes (Continued)

BIOS Cisco Systems, Inc. C240M4.2.0.3c.0.091920142008 09/19/2014

Memory:

16x 0xCE00 M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz

8x NO DIMM NO DIMM

(End of data from sysinfo program)

## General Notes

Environment variables set by runspec before the start of the run:

KMP\_AFFINITY = "granularity=fine,compact,1,0"

LD\_LIBRARY\_PATH = "/opt/cpu2006-1.2/libs/32:/opt/cpu2006-1.2/libs/64:/opt/cpu2006-1.2/sh"

OMP\_NUM\_THREADS = "24"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB memory using RedHat EL 7.0

Transparent Huge Pages disabled with:

echo never > /sys/kernel/mm/transparent\_hugepage/enabled

Filesystem page cache cleared with:

echo 1> /proc/sys/vm/drop\_caches

runspec command invoked through numactl i.e.:

numactl --interleave=all runspec <etc>

## 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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## Base Portability Flags (Continued)

```

437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.deall: -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 -opt-prefetch
-ansi-alias

```

C++ benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

```

Fortran benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

```

Benchmarks using both Fortran and C:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias

```

## 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: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-auto-ilp32 -ansi-alias

470.lbm: basepeak = yes

482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel

C++ benchmarks:

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

447.dealII: basepeak = yes

450.soplex: basepeak = yes

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

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2  
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

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

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

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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 -ansi-alias

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-ic15.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revC.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revC.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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