



# SPEC<sup>®</sup> CFP2006 Result

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## Cisco Systems

Cisco UCS C240 M3 (Intel Xeon E5-2695 v2, 2.40 GHz)

**SPECfp<sup>®</sup>2006 = 85.3**

**SPECfp\_base2006 = 82.1**

CPU2006 license: 9019

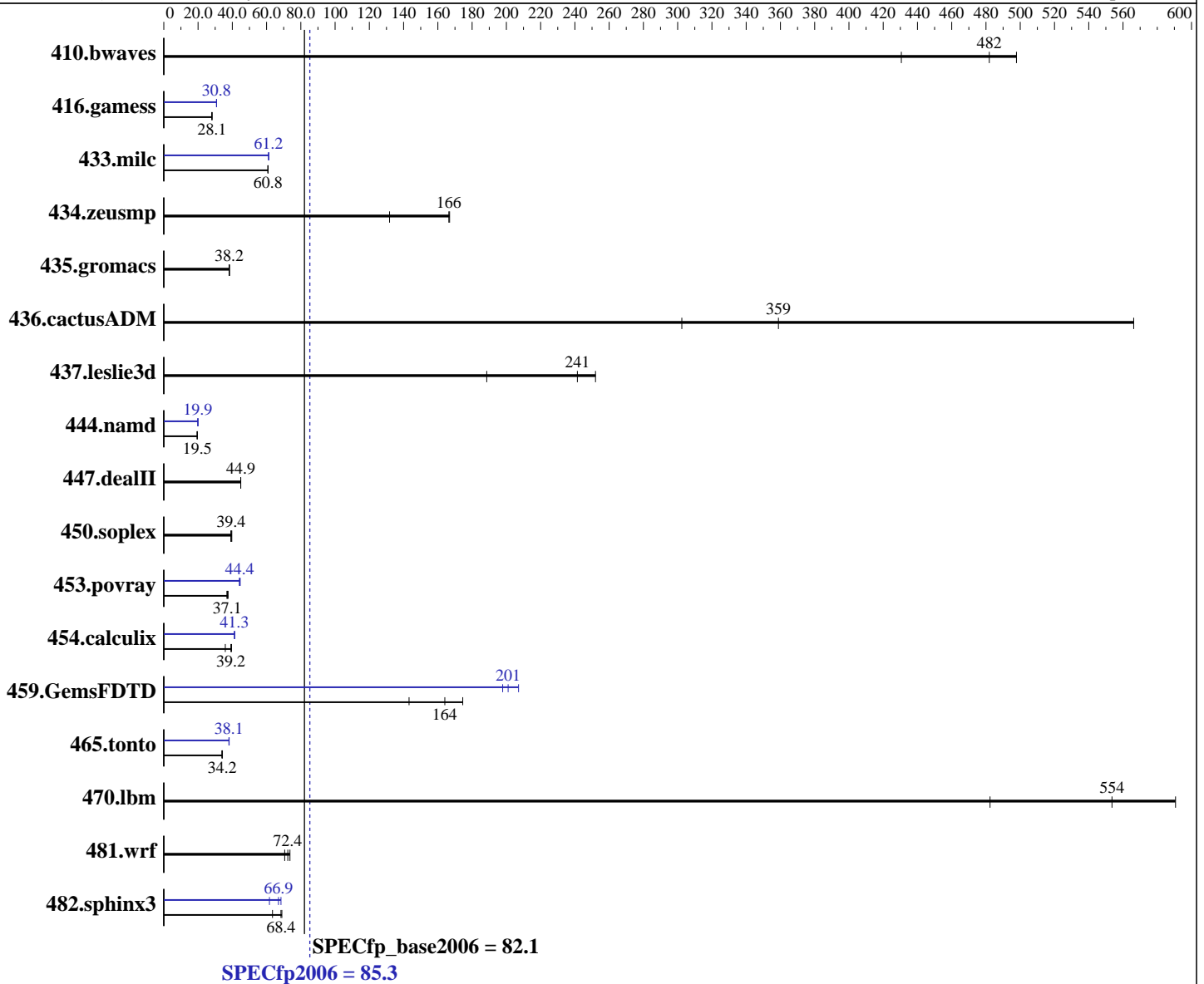
Test sponsor: Cisco Systems

Tested by: Cisco Systems

Test date: Nov-2013

Hardware Availability: Sep-2013

Software Availability: Sep-2013



### Hardware

CPU Name: Intel Xeon E5-2695 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 24 cores, 2 chips, 12 cores/chip  
 CPU(s) orderable: 1,2 chip  
 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 6.4 (Santiago)  
 2.6.32-358.el6.x86\_64  
 Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux;  
 Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ext4

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L3 Cache: 30 MB I+D on chip per chip  
Other Cache: None  
Memory: 128 GB (16 x 8 GB 2Rx4 PC3-14900R-13, ECC)  
Disk Subsystem: 1 x 300 GB 15000 RPM SAS  
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>28.2</u></b>	<b><u>482</u></b>	31.6	431	27.3	498	<b><u>28.2</u></b>	<b><u>482</u></b>	31.6	431	27.3	498
416.gamess	<b><u>696</u></b>	<b><u>28.1</u></b>	695	28.2	699	28.0	636	30.8	<b><u>636</u></b>	<b><u>30.8</u></b>	636	30.8
433.milc	151	60.9	151	60.8	<b><u>151</u></b>	<b><u>60.8</u></b>	<b><u>150</u></b>	<b><u>61.2</u></b>	150	61.2	150	61.3
434.zeusmp	69.0	132	54.5	167	<b><u>54.7</u></b>	<b><u>166</u></b>	69.0	132	54.5	167	<b><u>54.7</u></b>	<b><u>166</u></b>
435.gromacs	187	38.1	<b><u>187</u></b>	<b><u>38.2</u></b>	186	38.4	187	38.1	<b><u>187</u></b>	<b><u>38.2</u></b>	186	38.4
436.cactusADM	<b><u>33.3</u></b>	<b><u>359</u></b>	21.1	566	39.5	302	<b><u>33.3</u></b>	<b><u>359</u></b>	21.1	566	39.5	302
437.leslie3d	<b><u>38.9</u></b>	<b><u>241</u></b>	49.9	189	37.3	252	<b><u>38.9</u></b>	<b><u>241</u></b>	49.9	189	37.3	252
444.namd	411	19.5	411	19.5	<b><u>411</u></b>	<b><u>19.5</u></b>	403	19.9	<b><u>403</u></b>	<b><u>19.9</u></b>	403	19.9
447.dealII	255	44.9	255	44.9	<b><u>255</u></b>	<b><u>44.9</u></b>	255	44.9	255	44.9	<b><u>255</u></b>	<b><u>44.9</u></b>
450.soplex	<b><u>212</u></b>	<b><u>39.4</u></b>	210	39.7	213	39.1	<b><u>212</u></b>	<b><u>39.4</u></b>	210	39.7	213	39.1
453.povray	142	37.5	<b><u>143</u></b>	<b><u>37.1</u></b>	144	36.8	<b><u>120</u></b>	<b><u>44.4</u></b>	119	44.6	121	44.1
454.calculix	230	35.9	209	39.5	<b><u>211</u></b>	<b><u>39.2</u></b>	200	41.3	<b><u>200</u></b>	<b><u>41.3</u></b>	200	41.3
459.GemsFDTD	<b><u>64.7</u></b>	<b><u>164</u></b>	60.8	175	74.1	143	51.2	207	<b><u>52.8</u></b>	<b><u>201</u></b>	53.6	198
465.tonto	<b><u>288</u></b>	<b><u>34.2</u></b>	287	34.2	291	33.9	<b><u>258</u></b>	<b><u>38.1</u></b>	258	38.2	259	38.0
470.lbm	28.5	482	23.3	591	<b><u>24.8</u></b>	<b><u>554</u></b>	28.5	482	23.3	591	<b><u>24.8</u></b>	<b><u>554</u></b>
481.wrf	<b><u>154</u></b>	<b><u>72.4</u></b>	152	73.6	158	70.6	<b><u>154</u></b>	<b><u>72.4</u></b>	152	73.6	158	70.6
482.sphinx3	283	68.9	<b><u>285</u></b>	<b><u>68.4</u></b>	307	63.5	<b><u>285</u></b>	<b><u>68.4</u></b>	<b><u>291</u></b>	<b><u>66.9</u></b>	316	61.7

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

Intel HT Technology = Disabled  
CPU performance set to HPC  
Power Technology set to Custom  
CPU Power State C6 set to Enabled  
CPU Power State C1 Enhanced set to Disabled  
Energy Performance policy set to Performance  
Memory RAS configuration set to Maximum Performance  
DRAM Clock Throttling Set to Performance  
LV DDR Mode set to Performance-mode  
DRAM Refresh Rate Set to 1x

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**Test date:** Nov-2013

**Hardware Availability:** Sep-2013

**Software Availability:** Sep-2013

### Platform Notes (Continued)

```
Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on C240M3-ivb Sun Nov 24 18:21:05 2013
```

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 E5-2695 v2 @ 2.40GHz
 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:      132125188 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

```
/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.4 (Santiago)
```

```
From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server
```

```
uname -a:
Linux C240M3-ivb 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013
x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Nov 24 17:43
```

```
SPEC is set to: /opt/cpu2006-1.2
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/sdal        ext4      275G  56G  205G  22% /
```

```
Additional information from dmidecode:
BIOS Cisco Systems, Inc. C240M3.1.5.3b.0.082020130616 08/20/2013
Memory:
 16x 0xAD00 HMT31GR7EFR4C-RD 8 GB 1866 MHz 2 rank
 8x NO DIMM NO DIMM
```

(End of data from sysinfo program)



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## General Notes

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

```
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 i7-860 CPU + 8GB memory using RedHat EL 6.4

Transparent Huge Pages enabled with:

```
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```

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
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
```



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## Base Optimization Flags

C benchmarks:

`-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias`

C++ benchmarks:

`-xAVX -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias`

Fortran benchmarks:

`-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch`

Benchmarks using both Fortran and C:

`-xAVX -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`

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

433.milc: `-xAVX(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: `-xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel`

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## Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xAVX(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.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xAVX(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: -xAVX(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: -xAVX(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: -xAVX(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

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xAVX -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-ic14.0-official-linux64.20140128.html>

<http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2.20130717.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml>

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