



# SPEC<sup>®</sup> CFP2006 Result

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## Cisco Systems

**SPECfp<sup>®</sup>2006 = 66.4**

Cisco UCS C240 M3 (Intel Xeon E5-2620, 2.00 GHz)

**SPECfp\_base2006 = 63.7**

**CPU2006 license:** 9019

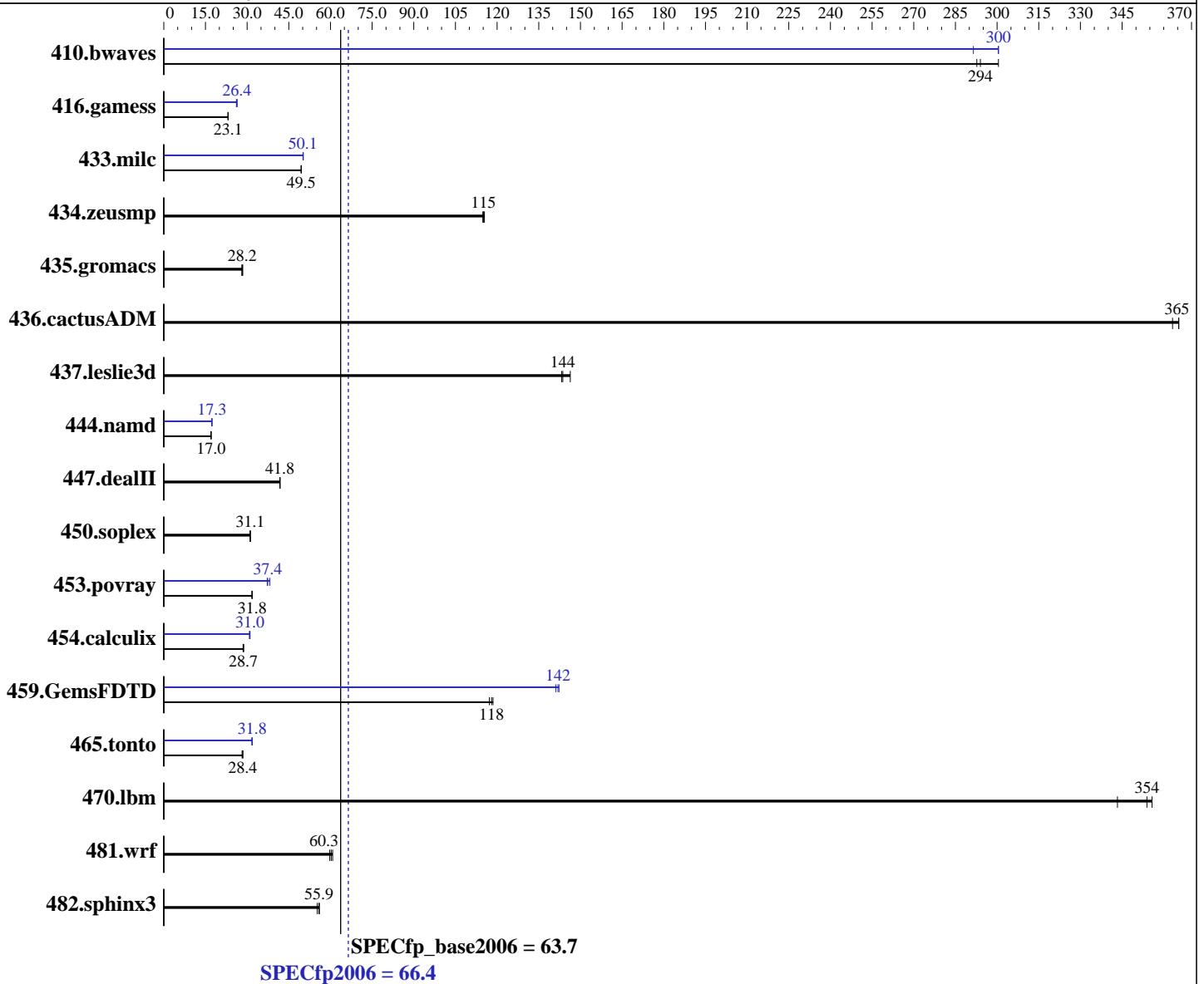
**Test date:** May-2012

**Test sponsor:** Cisco Systems

**Hardware Availability:** Jun-2012

**Tested by:** Cisco Systems

**Software Availability:** Dec-2011



### Hardware

CPU Name: Intel Xeon E5-2620  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.50 GHz  
 CPU MHz: 2000  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 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 6.2 (Santiago)  
 2.6.32-220.el6.x86\_64  
 Compiler: C/C++: Version 12.1.3.293 of Intel C++ Studio XE for Linux;  
 Fortran: Version 12.1.3.293 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ext4

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L3 Cache: 15 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1333 MHz and CL7)  
 Disk Subsystem: 1 X 73 GB 10000 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    | 45.2        | 300         | 46.4        | 293         | <b>46.2</b> | <b>294</b>  | 46.6        | 291         | <b>45.2</b> | <b>300</b>  | 45.2        | 300         |
| 416.gamess    | 844         | 23.2        | <b>847</b>  | <b>23.1</b> | 847         | 23.1        | 749         | 26.1        | 743         | 26.4        | <b>743</b>  | <b>26.4</b> |
| 433.milc      | 186         | 49.5        | <b>186</b>  | <b>49.5</b> | 186         | 49.5        | 183         | 50.1        | 183         | 50.3        | <b>183</b>  | <b>50.1</b> |
| 434.zeusmp    | <b>79.0</b> | <b>115</b>  | 78.8        | 115         | 79.2        | 115         | <b>79.0</b> | <b>115</b>  | 78.8        | 115         | 79.2        | 115         |
| 435.gromacs   | 254         | 28.1        | 251         | 28.4        | <b>253</b>  | <b>28.2</b> | 254         | 28.1        | 251         | 28.4        | <b>253</b>  | <b>28.2</b> |
| 436.cactusADM | 32.7        | 365         | 32.9        | 363         | <b>32.7</b> | <b>365</b>  | 32.7        | 365         | 32.9        | 363         | <b>32.7</b> | <b>365</b>  |
| 437.leslie3d  | 64.2        | 146         | <b>65.4</b> | <b>144</b>  | 65.6        | 143         | 64.2        | 146         | <b>65.4</b> | <b>144</b>  | 65.6        | 143         |
| 444.namd      | <b>471</b>  | <b>17.0</b> | 471         | 17.0        | 471         | 17.0        | 463         | 17.3        | <b>463</b>  | <b>17.3</b> | 463         | 17.3        |
| 447.dealII    | <b>273</b>  | <b>41.8</b> | 273         | 41.8        | 274         | 41.8        | <b>273</b>  | <b>41.8</b> | 273         | 41.8        | 274         | 41.8        |
| 450.soplex    | <b>268</b>  | <b>31.1</b> | 268         | 31.1        | 268         | 31.1        | <b>268</b>  | <b>31.1</b> | 268         | 31.1        | 268         | 31.1        |
| 453.povray    | 168         | 31.7        | <b>167</b>  | <b>31.8</b> | 167         | 31.9        | 139         | 38.2        | 143         | 37.2        | <b>142</b>  | <b>37.4</b> |
| 454.calculix  | 289         | 28.5        | 287         | 28.8        | <b>288</b>  | <b>28.7</b> | 266         | 31.0        | 268         | 30.8        | <b>266</b>  | <b>31.0</b> |
| 459.GemsFDTD  | <b>89.9</b> | <b>118</b>  | 90.5        | 117         | 89.5        | 119         | 74.6        | 142         | <b>74.8</b> | <b>142</b>  | 75.2        | 141         |
| 465.tonto     | 349         | 28.2        | <b>346</b>  | <b>28.4</b> | 346         | 28.4        | 310         | 31.7        | 309         | 31.8        | <b>309</b>  | <b>31.8</b> |
| 470.lbm       | 40.0        | 343         | 38.6        | 356         | <b>38.8</b> | <b>354</b>  | 40.0        | 343         | 38.6        | 356         | <b>38.8</b> | <b>354</b>  |
| 481.wrf       | 184         | 60.8        | <b>185</b>  | <b>60.3</b> | 187         | 59.7        | 184         | 60.8        | <b>185</b>  | <b>60.3</b> | 187         | 59.7        |
| 482.sphinx3   | 353         | 55.3        | 348         | 56.0        | <b>349</b>  | <b>55.9</b> | 353         | 55.3        | 348         | 56.0        | <b>349</b>  | <b>55.9</b> |

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 Configuration:

Processor Power State C6 set to Disabled

Processor Power State C1 Enhanced set to Disabled

Power Technology set to Custom

Energy Performance set to Performance

DRAM Clock Throttling set to Performance

Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6800

\$Rev: 6800 \$ \$Date:: 2011-10-11 #\$ 6f2ebdff5032aaa42e583f96b07f99d3

running on localhost.localdomain Sat May 12 21:24:14 2012

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CPU2006 license: 9019

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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 E5-2620 0 @ 2.00GHz
 2 "physical id"s (chips)
 12 "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    : 6
  siblings     : 6
  physical 0   : cores 0 1 2 3 4 5
  physical 1   : cores 0 1 2 3 4 5
cache size    : 15360 KB

```

```

From /proc/meminfo
MemTotal:      132103104 kB
HugePages_Total: 0
Hugepagesize:  2048 kB

```

```

/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.2 (Santiago)

```

```

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

```

```

uname -a:
Linux localhost.localdomain 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13
EST 2011 x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 May 12 21:22

```

SPEC is set to: /opt/cpu2006-1.2
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/sdal       ext4      66G   9.9G  53G  16% /

```

Additional information from dmidecode:

```

Memory:
16x 0xCE00 M393B1K70DH0-YK0 8 GB 1600 MHz 1 rank

```

(End of data from sysinfo program)



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## General Notes

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

KMP\_AFFINITY = "granularity=fine,scatter"

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

OMP\_NUM\_THREADS = "12"

Intel HT Technology = disable

Binaries compiled on a system with 2 X Intel Xeon E5-2690 CPU + 128 GB memory using RHEL 6.2

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/redhat\_transparent\_hugepage/enabled

Filesystem page cache cleared with:

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

## 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 -static -parallel -opt-prefetch  
-ansi-alias

C++ benchmarks:

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

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

-xAVX -ipo -O3 -no-prec-div -static -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) -static -auto-ilp32  
-ansi-alias

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

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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: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel  
-static

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- -static

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-ic12.1-official-linux64.20111122.html>

<http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2.20130607.html>



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<http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2.20130607.xml>

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

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