



# SPEC<sup>®</sup> CFP2006 Result

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## Cisco Systems

SPECfp<sup>®</sup>2006 = **67.6**

Cisco UCS B22 M3 (Intel Xeon E5-2450, 2.10 GHz)

SPECfp\_base2006 = **64.8**

CPU2006 license: 9019

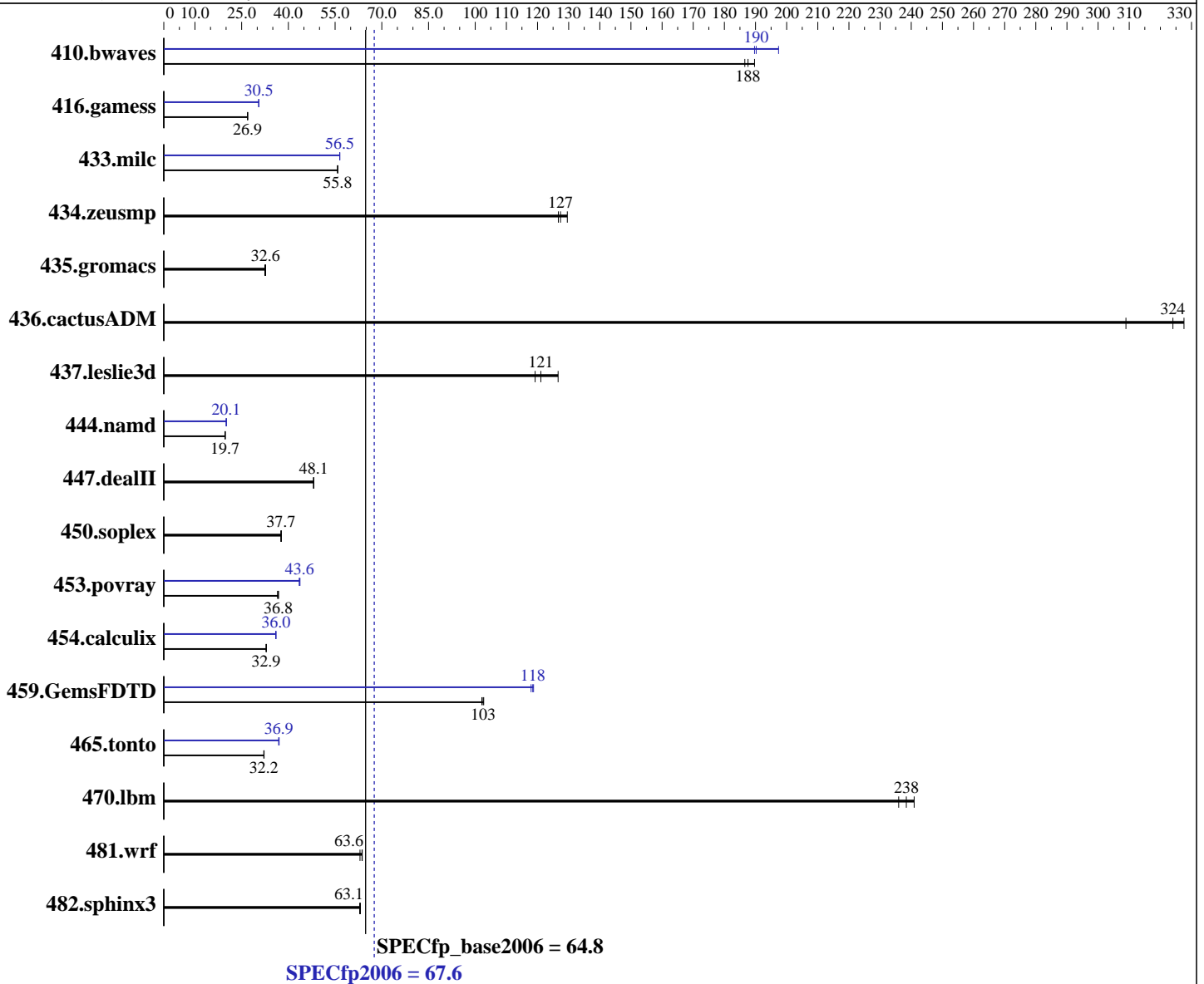
Test date: Jul-2012

Test sponsor: Cisco Systems

Hardware Availability: Aug-2012

Tested by: Cisco Systems

Software Availability: Feb-2012



### Hardware

CPU Name: Intel Xeon E5-2450  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.90 GHz  
 CPU MHz: 2100  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 2 chips, 8 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: 20 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 96 GB (12 x 8 GB 2Rx4 PC3-12800R-11, ECC)  
 Disk Subsystem: 1 X 146 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>72.4</u></b>	<b><u>188</u></b>	72.8	187	71.6	190	71.6	190	<b><u>71.4</u></b>	<b><u>190</u></b>	68.8	197
416.gamess	<b><u>728</u></b>	<b><u>26.9</u></b>	727	26.9	728	26.9	642	30.5	642	30.5	<b><u>642</u></b>	<b><u>30.5</u></b>
433.milc	<b><u>164</u></b>	<b><u>55.8</u></b>	164	55.8	164	55.8	<b><u>163</u></b>	<b><u>56.5</u></b>	163	56.5	162	56.5
434.zeusmp	70.2	130	<b><u>71.4</u></b>	<b><u>127</u></b>	71.8	127	70.2	130	<b><u>71.4</u></b>	<b><u>127</u></b>	71.8	127
435.gromacs	218	32.7	220	32.4	<b><u>219</u></b>	<b><u>32.6</u></b>	218	32.7	220	32.4	<b><u>219</u></b>	<b><u>32.6</u></b>
436.cactusADM	38.7	309	36.5	328	<b><u>36.9</u></b>	<b><u>324</u></b>	38.7	309	36.5	328	<b><u>36.9</u></b>	<b><u>324</u></b>
437.leslie3d	<b><u>77.6</u></b>	<b><u>121</u></b>	74.2	127	78.8	119	<b><u>77.6</u></b>	<b><u>121</u></b>	74.2	127	78.8	119
444.namd	<b><u>407</u></b>	<b><u>19.7</u></b>	407	19.7	407	19.7	<b><u>400</u></b>	<b><u>20.1</u></b>	400	20.1	400	20.1
447.dealII	238	48.1	<b><u>238</u></b>	<b><u>48.1</u></b>	238	48.1	238	48.1	<b><u>238</u></b>	<b><u>48.1</u></b>	238	48.1
450.soplex	<b><u>221</u></b>	<b><u>37.7</u></b>	221	37.8	222	37.6	<b><u>221</u></b>	<b><u>37.7</u></b>	221	37.8	222	37.6
453.povray	146	36.5	<b><u>145</u></b>	<b><u>36.8</u></b>	145	36.8	122	43.7	122	43.5	<b><u>122</u></b>	<b><u>43.6</u></b>
454.calculix	251	32.9	251	32.9	<b><u>251</u></b>	<b><u>32.9</u></b>	229	36.0	<b><u>229</u></b>	<b><u>36.0</u></b>	230	35.9
459.GemsFDTD	<b><u>103</u></b>	<b><u>103</u></b>	103	103	104	102	89.4	119	<b><u>89.6</u></b>	<b><u>118</u></b>	90.0	118
465.tonto	306	32.1	<b><u>306</u></b>	<b><u>32.2</u></b>	306	32.2	<b><u>266</u></b>	<b><u>36.9</u></b>	266	37.0	267	36.9
470.lbm	58.2	236	57.0	241	<b><u>57.6</u></b>	<b><u>238</u></b>	58.2	236	57.0	241	<b><u>57.6</u></b>	<b><u>238</u></b>
481.wrf	<b><u>176</u></b>	<b><u>63.6</u></b>	177	63.0	175	63.7	<b><u>176</u></b>	<b><u>63.6</u></b>	177	63.0	175	63.7
482.sphinx3	309	63.1	<b><u>309</u></b>	<b><u>63.1</u></b>	310	62.9	309	63.1	<b><u>309</u></b>	<b><u>63.1</u></b>	310	62.9

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

Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6800  
 \$Rev: 6800 \$ \$Date:: 2011-10-11 #\$ 6f2ebdff5032aaa42e583f96b07f99d3  
 running on localhost.localdomain Tue Jul 17 10:23:22 2012

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 E5-2450 0 @ 2.10GHz  
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CPU2006 license: 9019

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Hardware Availability: Aug-2012

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## Platform Notes (Continued)

2 "physical id"s (chips)  
16 "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 : 8
siblings  : 8
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7
cache size : 20480 KB
```

From /proc/meminfo

```
MemTotal:      99007852 kB
HugePages_Total: 0
Hugepagesize:  2048 kB
```

/usr/bin/lsc\_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 Jul 17 10:21

SPEC is set to: /opt/cpu2006-1.2

```
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/sdal        ext4      134G  9.9G  118G   8% /
```

Additional information from dmidecode:

```
Memory:
12x 0xCE00 M393B1K70DH0-YK0 8 GB 1600 MHz 2 rank
```

(End of data from sysinfo program)

## 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 = "16"
```

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:

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## General Notes (Continued)

```
echo 1> /proc/sys/vm/drop_caches
```

Submitted\_by: "Sheshgiri I (shei)" <shei@cisco.com>

Submitted: Mon Sep 17 04:19:23 EDT 2012

Submission: cpu2006-20120917-24474.sub

## 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.deallI: -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:

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

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## Base Optimization Flags (Continued)

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

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

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## Peak Optimization Flags (Continued)

447.dealII: 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-linux64.20120425.html>

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

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml>

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



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