



# SPEC® CFP2006 Result

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## Cisco Systems

**SPECfp®2006 = 71.1**

Cisco UCS B260 M4 (Intel Xeon E7-4830 v2 2.20GHz)

**SPECfp\_base2006 = 69.2**

CPU2006 license: 9019

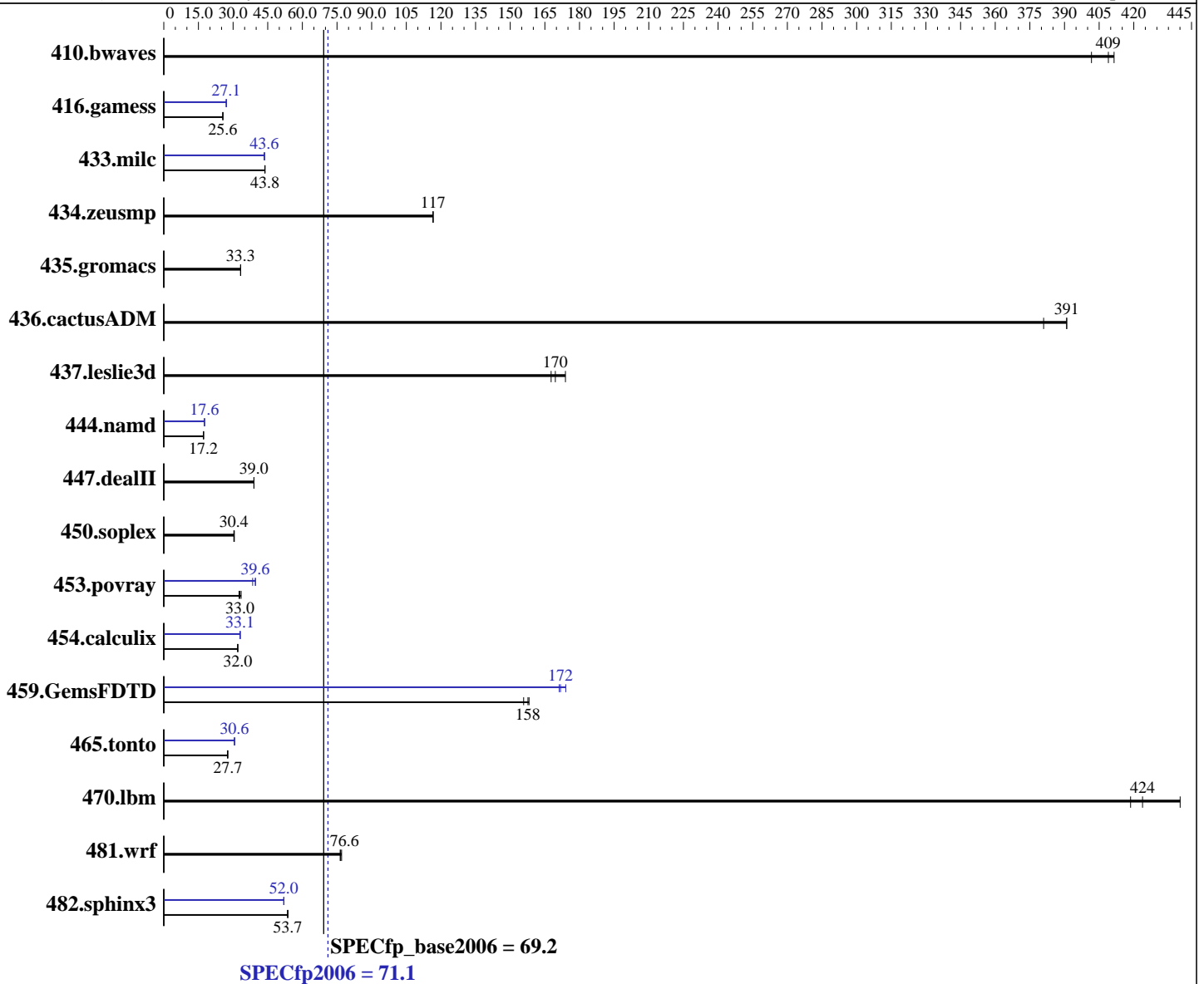
Test date: Oct-2014

Test sponsor: Cisco Systems

Hardware Availability: May-2014

Tested by: Cisco Systems

Software Availability: Sep-2013



### Hardware

CPU Name: Intel Xeon E7-4830 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.70 GHz  
 CPU MHz: 2200  
 FPU: Integrated  
 CPU(s) enabled: 20 cores, 2 chips, 10 cores/chip, 2 threads/core  
 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

Continued on next page

### Software

Operating System: Red Hat Enterprise Linux Server release 6.5 (Santiago)  
 2.6.32-431.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

Continued on next page



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L3 Cache: 20 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 256 GB (32 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1066 MHz and CL11)  
 Disk Subsystem: 1 X 100 GB SATA SSD  
 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	33.8	402	33.0	411	<b>33.2</b>	<b>409</b>	33.8	402	33.0	411	<b>33.2</b>	<b>409</b>
416.gamess	765	25.6	766	25.6	<b>766</b>	<b>25.6</b>	724	27.0	<b>724</b>	<b>27.1</b>	722	27.1
433.milc	<b>210</b>	<b>43.8</b>	210	43.8	209	43.8	210	43.6	<b>211</b>	<b>43.6</b>	211	43.5
434.zeusmp	<b>78.0</b>	<b>117</b>	78.0	117	78.1	117	<b>78.0</b>	<b>117</b>	78.0	117	78.1	117
435.gromacs	215	33.2	215	33.3	<b>215</b>	<b>33.3</b>	215	33.2	215	33.3	<b>215</b>	<b>33.3</b>
436.cactusADM	30.6	391	<b>30.6</b>	<b>391</b>	31.4	381	30.6	391	<b>30.6</b>	<b>391</b>	31.4	381
437.leslie3d	54.1	174	<b>55.4</b>	<b>170</b>	56.1	168	54.1	174	<b>55.4</b>	<b>170</b>	56.1	168
444.namd	<b>466</b>	<b>17.2</b>	466	17.2	466	17.2	455	17.6	455	17.6	<b>455</b>	<b>17.6</b>
447.dealII	293	39.0	<b>293</b>	<b>39.0</b>	293	39.1	293	39.0	<b>293</b>	<b>39.0</b>	293	39.1
450.soplex	273	30.5	275	30.3	<b>274</b>	<b>30.4</b>	273	30.5	275	30.3	<b>274</b>	<b>30.4</b>
453.povray	159	33.5	163	32.6	<b>161</b>	<b>33.0</b>	138	38.5	<b>134</b>	<b>39.6</b>	134	39.7
454.calculix	<b>258</b>	<b>32.0</b>	257	32.1	258	32.0	249	33.1	<b>250</b>	<b>33.1</b>	250	33.1
459.GemsFDTD	67.1	158	<b>67.3</b>	<b>158</b>	68.1	156	<b>61.8</b>	<b>172</b>	62.0	171	61.0	174
465.tonto	357	27.5	<b>356</b>	<b>27.7</b>	355	27.8	321	30.7	<b>322</b>	<b>30.6</b>	322	30.6
470.lbm	32.8	419	31.2	440	<b>32.4</b>	<b>424</b>	32.8	419	31.2	440	<b>32.4</b>	<b>424</b>
481.wrf	145	77.0	146	76.4	<b>146</b>	<b>76.6</b>	145	77.0	146	76.4	<b>146</b>	<b>76.6</b>
482.sphinx3	363	53.8	<b>363</b>	<b>53.7</b>	364	53.6	<b>375</b>	<b>52.0</b>	375	51.9	375	52.0

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 = Enabled  
 CPU performance set to HPC  
 Power Technology set to Custom  
 CPU Power State C6 set to Disabled  
 CPU Power State C1 Enhanced set to Disabled  
 Memory RAS configuration set to Maximum Performance  
 DRAM Clock Throttling Set to Performance  
 Sysinfo program /opt/cpu2006/config/sysinfo.rev6818  
 \$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191

Continued on next page



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### Platform Notes (Continued)

running on b260m4 Mon Oct 13 07:39:29 2014

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 E7-4830 v2 @ 2.20GHz
 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 : 10
  siblings  : 20
  physical 0: cores 0 1 2 3 4 8 9 10 11 12
  physical 1: cores 0 1 2 3 4 8 9 10 11 12
cache size : 20480 KB

```

```

From /proc/meminfo
MemTotal:      263806728 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

```

/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.5 (Santiago)

```

```

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

```

```

uname -a:
Linux b260m4 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013 x86_64
x86_64 x86_64 GNU/Linux

```

run-level 3 Oct 12 23:54

```

SPEC is set to: /opt/cpu2006
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sdal        ext4  91G   49G   38G  57% /

```

```

Additional information from dmidecode:
BIOS Cisco Systems, Inc. EXM4-1.2.2.2.0.042820141805 04/28/2014
Memory:
 32x      8 GB
 32x 0xCE00 M393B1K70QB0-YK0 8 GB 1066 MHz 2 rank
 16x 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:

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

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

OMP\_NUM\_THREADS = "20"

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.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



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## Base Optimization Flags

C benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.2 -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: -xSSE4.2(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: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel

Continued on next page



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## Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xSSE4.2(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: -xSSE4.2(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: -xSSE4.2(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: -xSSE4.2(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: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -inline-alloc  
-opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xSSE4.2 -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-revB.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>

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

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[info@spec.org](mailto:info@spec.org)

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Page 6



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

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