



# SPEC® CFP2006 Result

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## Cisco Systems

Cisco UCS B200 M3 (Intel Xeon E5-2670 v2, 2.50 GHz)

SPECfp®2006 = 89.4

SPECfp\_base2006 = 86.7

CPU2006 license: 9019

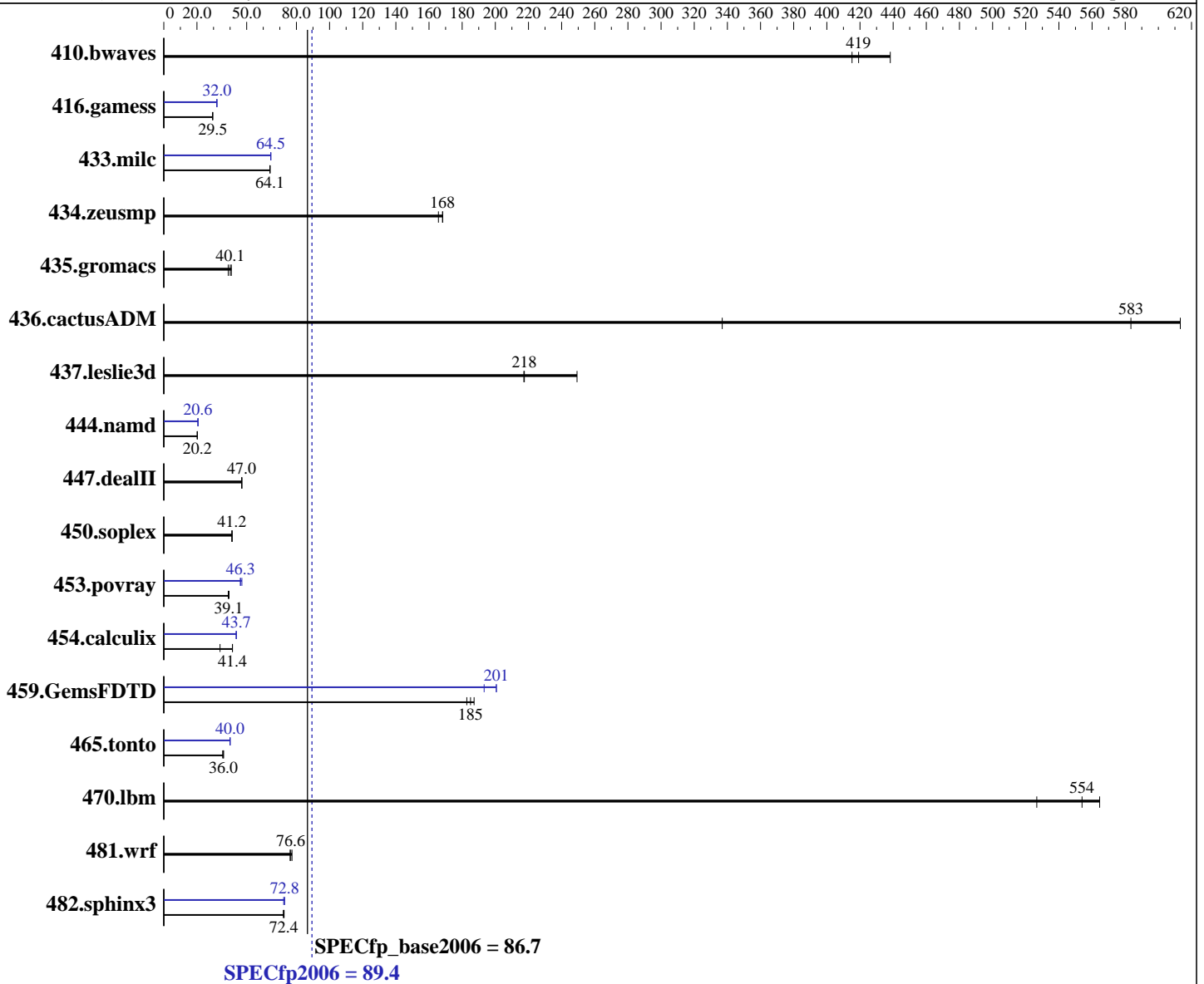
Test sponsor: Cisco Systems

Tested by: Cisco Systems

Test date: Nov-2013

Hardware Availability: Sep-2013

Software Availability: Sep-2013



### Hardware

CPU Name: Intel Xeon E5-2670 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz  
 CPU MHz: 2500  
 FPU: Integrated  
 CPU(s) enabled: 20 cores, 2 chips, 10 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

Continued on next page

### 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

Continued on next page



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L3 Cache: 25 MB I+D on chip per chip  
Other Cache: None  
Memory: 256 GB (16 x 16 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>32.4</u></b>	<b><u>419</u></b>	32.7	415	31.0	438	<b><u>32.4</u></b>	<b><u>419</u></b>	32.7	415	31.0	438
416.gamess	663	29.5	667	29.4	<b><u>663</u></b>	<b><u>29.5</u></b>	612	32.0	<b><u>611</u></b>	<b><u>32.0</u></b>	611	32.0
433.milc	143	64.1	143	64.0	<b><u>143</u></b>	<b><u>64.1</u></b>	142	64.6	<b><u>142</u></b>	<b><u>64.5</u></b>	142	64.5
434.zeusmp	54.1	168	<b><u>54.1</u></b>	<b><u>168</u></b>	54.9	166	54.1	168	<b><u>54.1</u></b>	<b><u>168</u></b>	54.9	166
435.gromacs	<b><u>178</u></b>	<b><u>40.1</u></b>	184	38.9	175	40.8	<b><u>178</u></b>	<b><u>40.1</u></b>	184	38.9	175	40.8
436.cactusADM	<b><u>20.5</u></b>	<b><u>583</u></b>	35.5	337	19.5	613	<b><u>20.5</u></b>	<b><u>583</u></b>	35.5	337	19.5	613
437.leslie3d	43.3	217	37.7	249	<b><u>43.2</u></b>	<b><u>218</u></b>	43.3	217	37.7	249	<b><u>43.2</u></b>	<b><u>218</u></b>
444.namd	<b><u>397</u></b>	<b><u>20.2</u></b>	397	20.2	397	20.2	389	20.6	<b><u>389</u></b>	<b><u>20.6</u></b>	389	20.6
447.dealII	<b><u>243</u></b>	<b><u>47.0</u></b>	243	47.1	243	47.0	<b><u>243</u></b>	<b><u>47.0</u></b>	243	47.1	243	47.0
450.soplex	203	41.1	<b><u>203</u></b>	<b><u>41.2</u></b>	203	41.2	203	41.1	<b><u>203</u></b>	<b><u>41.2</u></b>	203	41.2
453.povray	135	39.4	<b><u>136</u></b>	<b><u>39.1</u></b>	137	38.9	113	47.1	115	46.2	<b><u>115</u></b>	<b><u>46.3</u></b>
454.calculix	<b><u>199</u></b>	<b><u>41.4</u></b>	199	41.4	243	33.9	189	43.7	<b><u>189</u></b>	<b><u>43.7</u></b>	189	43.7
459.GemsFDTD	56.7	187	58.0	183	<b><u>57.3</u></b>	<b><u>185</u></b>	54.9	193	<b><u>52.9</u></b>	<b><u>201</u></b>	52.9	201
465.tonto	<b><u>273</u></b>	<b><u>36.0</u></b>	277	35.5	273	36.0	<b><u>246</u></b>	<b><u>40.0</u></b>	246	40.0	246	40.0
470.lbm	26.1	527	<b><u>24.8</u></b>	<b><u>554</u></b>	24.3	565	26.1	527	<b><u>24.8</u></b>	<b><u>554</u></b>	24.3	565
481.wrf	147	76.2	144	77.3	<b><u>146</u></b>	<b><u>76.6</u></b>	147	76.2	144	77.3	<b><u>146</u></b>	<b><u>76.6</u></b>
482.sphinx3	269	72.6	270	72.1	<b><u>269</u></b>	<b><u>72.4</u></b>	268	72.8	270	72.3	<b><u>268</u></b>	<b><u>72.8</u></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 Settings:  
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

Continued on next page



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**CPU2006 license:** 9019

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**Test date:** Nov-2013

**Hardware Availability:** Sep-2013

**Software Availability:** Sep-2013

### Platform Notes (Continued)

DRAM Refresh Rate Set to 1x

Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6818

\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191

running on B200M3-IVB Sat Nov 16 20:32:58 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 E5-2670 v2 @ 2.50GHz

2 "physical id"s (chips)

20 "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 : 10

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 : 25600 KB

From /proc/meminfo

MemTotal: 264463296 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 B200M3-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 16 20:31

SPEC is set to: /opt/cpu2006-1.2

Filesystem Type Size Used Avail Use% Mounted on

/dev/sdal ext4 275G 48G 213G 19% /

Additional information from dmidecode:

BIOS Cisco Systems, Inc. B200M3.2.1.3a.0.082320131800 08/23/2013

Memory:

16x 0xAD00 HMT42GR7AFR4C-RD 16 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 = "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.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`

Continued on next page



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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>

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

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Page 6



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