



# SPEC<sup>®</sup> CFP2006 Result

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## Cisco Systems

Cisco UCS B200 M3 (Intel Xeon E5-2660 v2, 2.20 GHz)

SPECfp<sup>®</sup>2006 = **83.1**

SPECfp\_base2006 = **79.5**

CPU2006 license: 9019

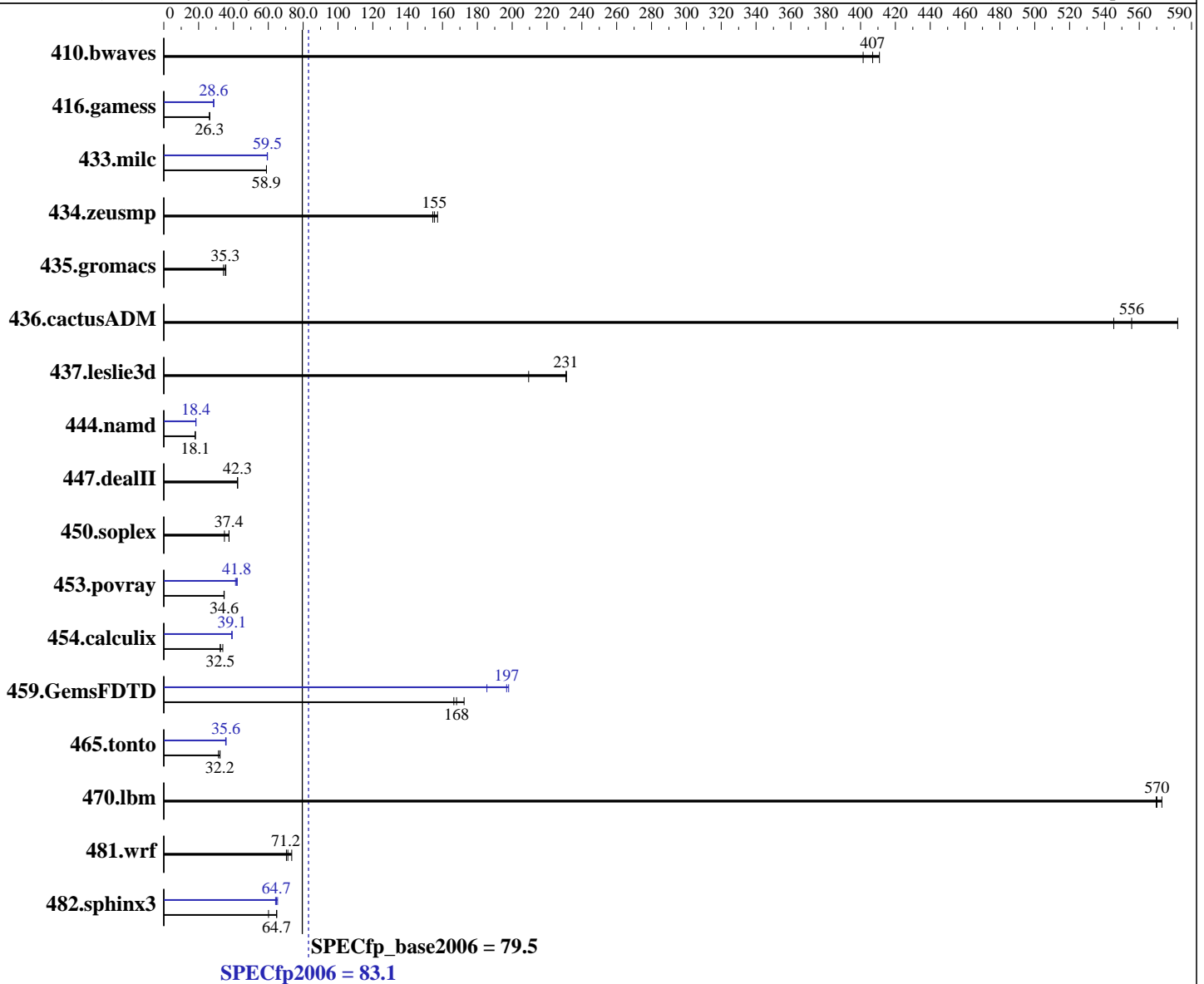
Test sponsor: Cisco Systems

Tested by: Cisco Systems

Test date: Nov-2013

Hardware Availability: Sep-2013

Software Availability: Sep-2013



### Hardware

CPU Name: Intel Xeon E5-2660 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.00 GHz  
 CPU MHz: 2200  
 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

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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: 25 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 600 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	<b>33.4</b>	<b>407</b>	33.8	401	33.1	411	<b>33.4</b>	<b>407</b>	33.8	401	33.1	411
416.gamess	747	26.2	744	26.3	<b>745</b>	<b>26.3</b>	684	28.6	684	28.6	<b>684</b>	<b>28.6</b>
433.milc	156	58.9	156	59.0	<b>156</b>	<b>58.9</b>	155	59.4	154	59.5	<b>154</b>	<b>59.5</b>
434.zeusmp	58.9	154	57.9	157	<b>58.5</b>	<b>155</b>	58.9	154	57.9	157	<b>58.5</b>	<b>155</b>
435.gromacs	200	35.6	<b>202</b>	<b>35.3</b>	209	34.2	200	35.6	<b>202</b>	<b>35.3</b>	209	34.2
436.cactusADM	20.5	582	<b>21.5</b>	<b>556</b>	21.9	545	20.5	582	<b>21.5</b>	<b>556</b>	21.9	545
437.leslie3d	44.9	209	40.7	231	<b>40.7</b>	<b>231</b>	44.9	209	40.7	231	<b>40.7</b>	<b>231</b>
444.namd	444	18.1	444	18.1	<b>444</b>	<b>18.1</b>	435	18.4	<b>435</b>	<b>18.4</b>	435	18.4
447.dealII	270	42.4	<b>270</b>	<b>42.3</b>	270	42.3	270	42.4	<b>270</b>	<b>42.3</b>	270	42.3
450.soplex	<b>223</b>	<b>37.4</b>	223	37.5	240	34.8	<b>223</b>	<b>37.4</b>	223	37.5	240	34.8
453.povray	153	34.7	154	34.5	<b>154</b>	<b>34.6</b>	129	41.2	126	42.2	<b>127</b>	<b>41.8</b>
454.calculix	<b>254</b>	<b>32.5</b>	244	33.9	255	32.4	<b>211</b>	<b>39.1</b>	211	39.1	211	39.1
459.GemsFDTD	63.7	167	<b>63.1</b>	<b>168</b>	61.5	172	<b>53.9</b>	<b>197</b>	57.2	185	53.6	198
465.tonto	305	32.3	314	31.3	<b>306</b>	<b>32.2</b>	277	35.5	275	35.8	<b>276</b>	<b>35.6</b>
470.lbm	<b>24.1</b>	<b>570</b>	24.1	570	24.0	573	<b>24.1</b>	<b>570</b>	24.1	570	24.0	573
481.wrf	159	70.4	152	73.4	<b>157</b>	<b>71.2</b>	159	70.4	152	73.4	<b>157</b>	<b>71.2</b>
482.sphinx3	<b>301</b>	<b>64.7</b>	324	60.1	300	64.9	298	65.3	<b>301</b>	<b>64.7</b>	304	64.2

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

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### 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 localhost.localdomain Sat Nov 9 00:24:11 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 E5-2660 v2 @ 2.20GHz

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: 132088872 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 localhost.localdomain 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 8 22:57

SPEC is set to: /opt/cpu2006-1.2

Filesystem Type Size Used Avail Use% Mounted on

/dev/sdal ext4 550G 48G 474G 10% /

Additional information from dmidecode:

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

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 = "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`

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

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