



# SPEC<sup>®</sup> CFP2006 Result

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## Huawei

SPECfp<sup>®</sup>2006 = 69.5

Huawei RH2288E V2 (Intel Xeon E5-2650L v2)

SPECfp\_base2006 = 66.9

CPU2006 license: 3175

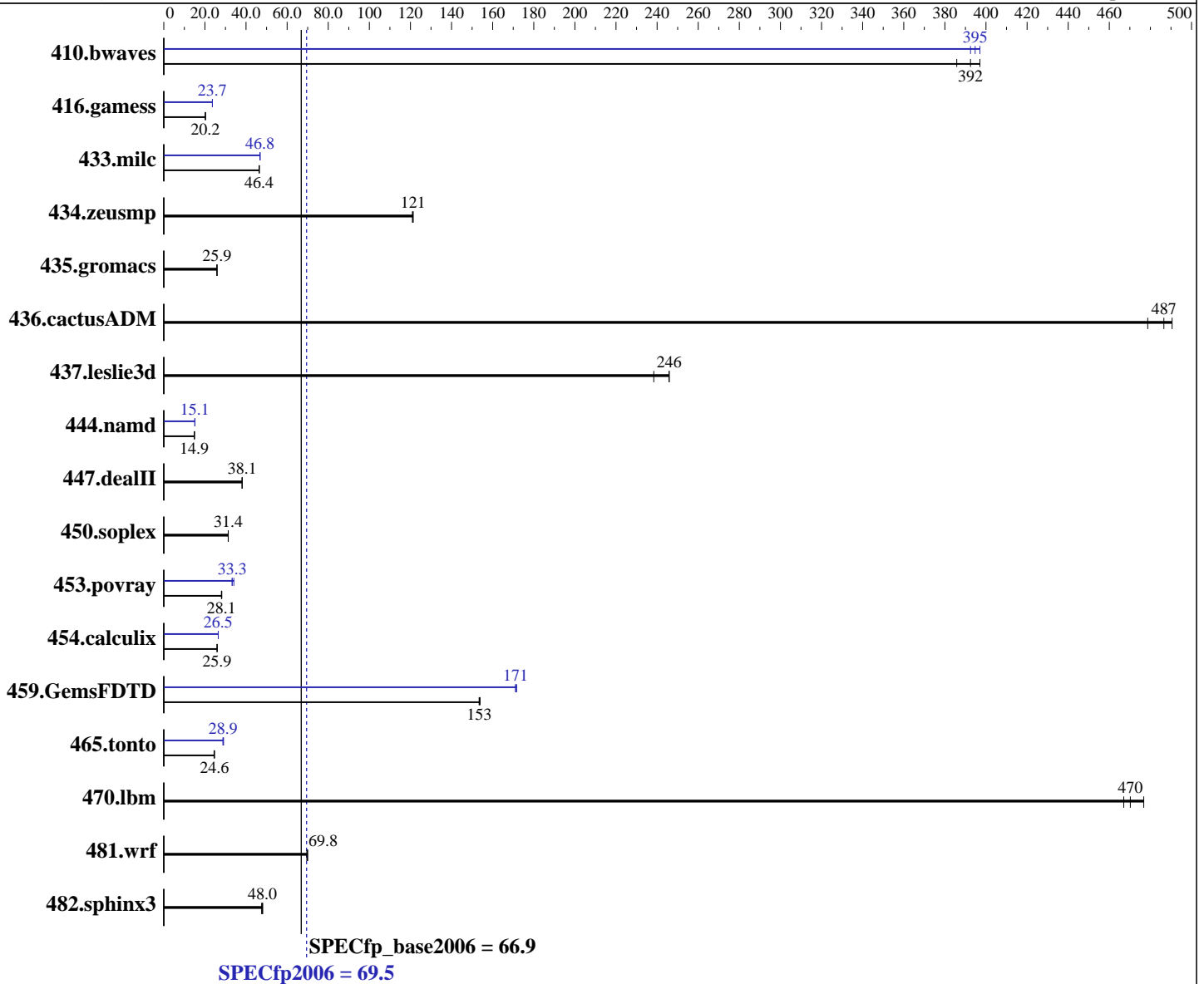
Test date: Sep-2014

Test sponsor: Huawei

Hardware Availability: Sep-2013

Tested by: Huawei

Software Availability: Sep-2013



### Hardware

CPU Name: Intel Xeon E5-2650L v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.10 GHz  
 CPU MHz: 1700  
 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 6.5 (Santiago)  
 2.6.32-431.el6.x86\_64  
 Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux;  
 Fortran: Version 12.1.0.225 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 2Rx8 PC3-12800R-11, ECC)  
 Disk Subsystem: 1 x 300 GB SAS, 10K RPM  
 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    | 34.2        | 397         | 35.2        | 386         | <b>34.6</b> | <b>392</b>  | <b>34.4</b> | <b>395</b>  | 34.2        | 397         | 34.6        | 392         |
| 416.gamess    | <b>967</b>  | <b>20.2</b> | 970         | 20.2        | 967         | 20.3        | 828         | 23.6        | <b>828</b>  | <b>23.7</b> | 828         | 23.7        |
| 433.milc      | 198         | 46.4        | 198         | 46.4        | <b>198</b>  | <b>46.4</b> | 196         | 46.8        | 196         | 46.8        | <b>196</b>  | <b>46.8</b> |
| 434.zeusmp    | 75.2        | 121         | <b>75.0</b> | <b>121</b>  | 75.0        | 121         | 75.2        | 121         | <b>75.0</b> | <b>121</b>  | 75.0        | 121         |
| 435.gromacs   | 276         | 25.9        | <b>276</b>  | <b>25.9</b> | 276         | 25.9        | 276         | 25.9        | <b>276</b>  | <b>25.9</b> | 276         | 25.9        |
| 436.cactusADM | 24.4        | 491         | 25.0        | 479         | <b>24.6</b> | <b>487</b>  | 24.4        | 491         | 25.0        | 479         | <b>24.6</b> | <b>487</b>  |
| 437.leslie3d  | <b>38.2</b> | <b>246</b>  | 39.4        | 238         | 38.2        | 246         | <b>38.2</b> | <b>246</b>  | 39.4        | 238         | 38.2        | 246         |
| 444.namd      | 539         | 14.9        | <b>539</b>  | <b>14.9</b> | 539         | 14.9        | <b>530</b>  | <b>15.1</b> | 530         | 15.1        | 530         | 15.1        |
| 447.dealII    | 300         | 38.1        | 300         | 38.1        | <b>300</b>  | <b>38.1</b> | 300         | 38.1        | 300         | 38.1        | <b>300</b>  | <b>38.1</b> |
| 450.soplex    | 266         | 31.3        | 266         | 31.4        | <b>266</b>  | <b>31.4</b> | 266         | 31.3        | 266         | 31.4        | <b>266</b>  | <b>31.4</b> |
| 453.povray    | 189         | 28.2        | <b>189</b>  | <b>28.1</b> | 190         | 28.0        | 156         | 34.1        | <b>160</b>  | <b>33.3</b> | 160         | 33.3        |
| 454.calculix  | 318         | 26.0        | <b>318</b>  | <b>25.9</b> | 318         | 25.9        | 311         | 26.5        | 311         | 26.5        | <b>311</b>  | <b>26.5</b> |
| 459.GemsFDTD  | 69.1        | 153         | <b>69.1</b> | <b>153</b>  | 68.9        | 154         | 61.8        | 172         | <b>62.0</b> | <b>171</b>  | 62.0        | 171         |
| 465.tonto     | 399         | 24.6        | <b>400</b>  | <b>24.6</b> | 403         | 24.4        | 342         | 28.7        | <b>340</b>  | <b>28.9</b> | 338         | 29.1        |
| 470.lbm       | <b>29.2</b> | <b>470</b>  | 29.4        | 467         | 28.8        | 477         | <b>29.2</b> | <b>470</b>  | 29.4        | 467         | 28.8        | 477         |
| 481.wrf       | 161         | 69.6        | <b>160</b>  | <b>69.8</b> | 160         | 70.0        | 161         | 69.6        | <b>160</b>  | <b>69.8</b> | 160         | 70.0        |
| 482.sphinx3   | 405         | 48.1        | 410         | 47.6        | <b>406</b>  | <b>48.0</b> | 405         | 48.1        | 410         | 47.6        | <b>406</b>  | <b>48.0</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:  
 Set Power Efficiency Mode to Custom  
 Baseboard Management Controller used to adjust the fan speed to 100%  
 Set Hyper-Threading to Disabled  
 Sysinfo program /spec/config/sysinfo.rev6800  
 \$Rev: 6800 \$ \$Date:: 2011-10-11 #\$ 6f2ebdff5032aaa42e583f96b07f99d3  
 running on wbspeccpu Wed Sep 10 19:21:03 2014

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:

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CPU2006 license: 3175

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Test date: Sep-2014

Hardware Availability: Sep-2013

Software Availability: Sep-2013

## Platform Notes (Continued)

<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

From /proc/cpuinfo

model name : Intel(R) Xeon(R) CPU E5-2650L v2 @ 1.70GHz

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: 132103760 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 wbspeccpu 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 Sep 2 10:15

SPEC is set to: /spec

Filesystem Type Size Used Avail Use% Mounted on

/dev/sdal ext4 270G 148G 109G 58% /

Additional information from dmidecode:

Memory:

16x Hynix HMT41GR7MFR8C-PB 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,compact,0,1"

LD\_LIBRARY\_PATH = "/spec/libs/32:/spec/libs/64"

OMP\_NUM\_THREADS = "20"

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## General Notes (Continued)

Binaries compiled on a system with 2 x Xeon X5645 CPU + 16GB memory using RHEL 6.1  
Transparent Huge Pages enabled with:  
echo always > /sys/kernel/mm/redhat\_transparent\_hugepage/enabled

## 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

## 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-linux64.20111122.html>

<http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-RevG.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml>

<http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-RevG.xml>



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