



# SPEC<sup>®</sup> CFP2006 Result

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## Huawei

**SPECfp<sup>®</sup>2006 = 106**

### Huawei CH222 (Intel Xeon E5-2690 v2)

**SPECfp\_base2006 = 102**

CPU2006 license: 3175

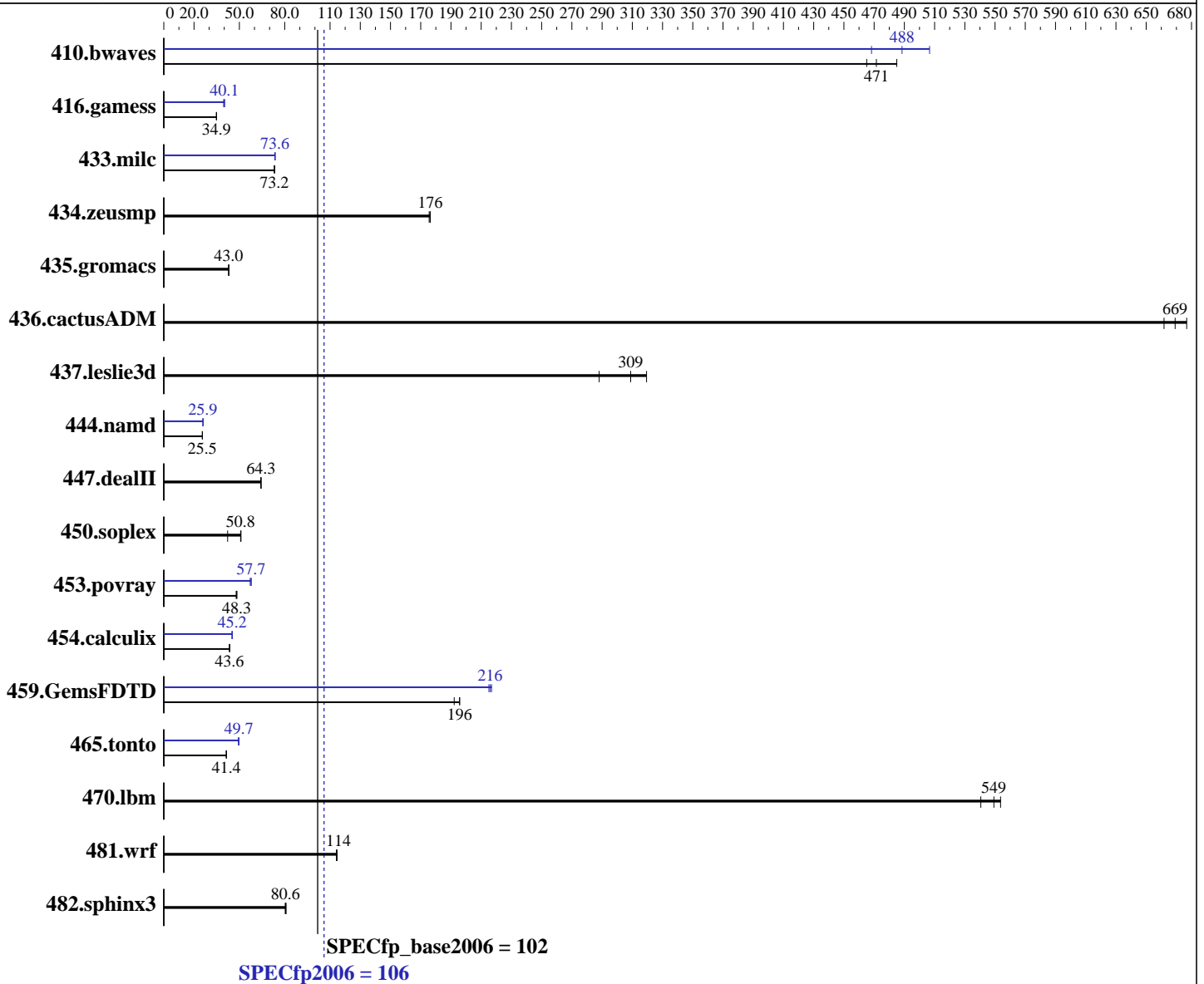
Test sponsor: Huawei

Tested by: Huawei

Test date: Aug-2014

Hardware Availability: Sep-2013

Software Availability: Nov-2013



#### Hardware

CPU Name: Intel Xeon E5-2690 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz  
 CPU MHz: 3000  
 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: 256 GB (16 x 16 GB 2Rx4 PC3-14900R-13, ECC)  
 Disk Subsystem: 1 x 300 GB SAS, 10000 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    | 28.0       | 485         | <b>28.8</b> | <b>471</b>  | 29.2        | 465         | <b>27.8</b> | <b>488</b>  | 26.8        | 507         | 29.0        | 468         |
| 416.gamess    | 562        | 34.8        | 562         | 34.9        | <b>562</b>  | <b>34.9</b> | <b>488</b>  | <b>40.1</b> | 487         | 40.2        | 495         | 39.6        |
| 433.milc      | 126        | 73.1        | <b>125</b>  | <b>73.2</b> | 125         | 73.4        | <b>125</b>  | <b>73.6</b> | 125         | 73.7        | 125         | 73.5        |
| 434.zeusmp    | 51.8       | 176         | <b>51.6</b> | <b>176</b>  | 51.6        | 176         | 51.8        | 176         | <b>51.6</b> | <b>176</b>  | 51.6        | 176         |
| 435.gromacs   | 166        | 43.0        | <b>166</b>  | <b>43.0</b> | 167         | 42.9        | 166         | 43.0        | <b>166</b>  | <b>43.0</b> | 167         | 42.9        |
| 436.cactusADM | 17.7       | 677         | <b>17.9</b> | <b>669</b>  | 18.1        | 662         | 17.7        | 677         | <b>17.9</b> | <b>669</b>  | 18.1        | 662         |
| 437.leslie3d  | 29.4       | 319         | 32.6        | 288         | <b>30.4</b> | <b>309</b>  | 29.4        | 319         | 32.6        | 288         | <b>30.4</b> | <b>309</b>  |
| 444.namd      | 314        | 25.5        | 314         | 25.5        | <b>314</b>  | <b>25.5</b> | 309         | 25.9        | <b>309</b>  | <b>25.9</b> | 309         | 26.0        |
| 447.dealII    | <b>178</b> | <b>64.3</b> | 178         | 64.3        | 178         | 64.3        | <b>178</b>  | <b>64.3</b> | 178         | 64.3        | 178         | 64.3        |
| 450.soplex    | 163        | 51.1        | 197         | 42.2        | <b>164</b>  | <b>50.8</b> | 163         | 51.1        | 197         | 42.2        | <b>164</b>  | <b>50.8</b> |
| 453.povray    | 111        | 47.9        | <b>110</b>  | <b>48.3</b> | 110         | 48.3        | 92.0        | 57.8        | <b>92.2</b> | <b>57.7</b> | 93.1        | 57.1        |
| 454.calculix  | 189        | 43.6        | <b>189</b>  | <b>43.6</b> | 190         | 43.5        | 183         | 45.2        | <b>182</b>  | <b>45.2</b> | 182         | 45.2        |
| 459.GemsFDTD  | 55.2       | 192         | 54.2        | 196         | <b>54.2</b> | <b>196</b>  | <b>49.1</b> | <b>216</b>  | 48.9        | 217         | 49.3        | 215         |
| 465.tonto     | 238        | 41.4        | <b>238</b>  | <b>41.4</b> | 238         | 41.4        | 199         | 49.4        | <b>198</b>  | <b>49.7</b> | 198         | 49.7        |
| 470.lbm       | 24.8       | 554         | 25.4        | 541         | <b>25.0</b> | <b>549</b>  | 24.8        | 554         | 25.4        | 541         | <b>25.0</b> | <b>549</b>  |
| 481.wrf       | 97.4       | 115         | 97.8        | 114         | <b>97.8</b> | <b>114</b>  | 97.4        | 115         | 97.8        | 114         | <b>97.8</b> | <b>114</b>  |
| 482.sphinx3   | 241        | 80.9        | <b>242</b>  | <b>80.6</b> | 243         | 80.3        | 241         | 80.9        | <b>242</b>  | <b>80.6</b> | 243         | 80.3        |

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  
 Set Hyper-Threading to Disabled  
 Baseboard Management Controller used to adjust the fan speed to 100%  
 Sysinfo program /spec/config/sysinfo.rev6800  
 \$Rev: 6800 \$ \$Date:: 2011-10-11 # \$ 6f2ebdff5032aaa42e583f96b07f99d3  
 running on localhost Mon Aug 18 17:09:50 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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Huawei CH222 (Intel Xeon E5-2690 v2)

SPECfp\_base2006 = 102

CPU2006 license: 3175

Test sponsor: Huawei

Tested by: Huawei

Test date: Aug-2014

Hardware Availability: Sep-2013

Software Availability: Nov-2013

## Platform Notes (Continued)

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

From /proc/cpuinfo

```
model name : Intel(R) Xeon(R) CPU E5-2690 v2 @ 3.00GHz
 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:      264478184 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 localhost 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 Aug 18 16:15

SPEC is set to: /spec

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2        ext4  272G  31G  227G  12% /
```

Additional information from dmidecode:

Memory:

```
4x Hynix HMT42GR7AFR4C-RD 16 GB 1867 MHz 2 rank
12x Samsung M393B2G70DB0-CMA 16 GB 1867 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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|                                      |                   |     |
|--------------------------------------|-------------------|-----|
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|                       |                                 |
|-----------------------|---------------------------------|
| CPU2006 license: 3175 | Test date: Aug-2014             |
| Test sponsor: Huawei  | Hardware Availability: Sep-2013 |
| Tested by: Huawei     | Software Availability: Nov-2013 |

## 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.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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Software Availability: Nov-2013

## 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/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-linux64.20120425.xml>

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



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Tested with SPEC CPU2006 v1.2.  
Report generated on Wed Sep 10 16:30:34 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 10 September 2014.