# SPEC® CFP2006 Result

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## Huawei

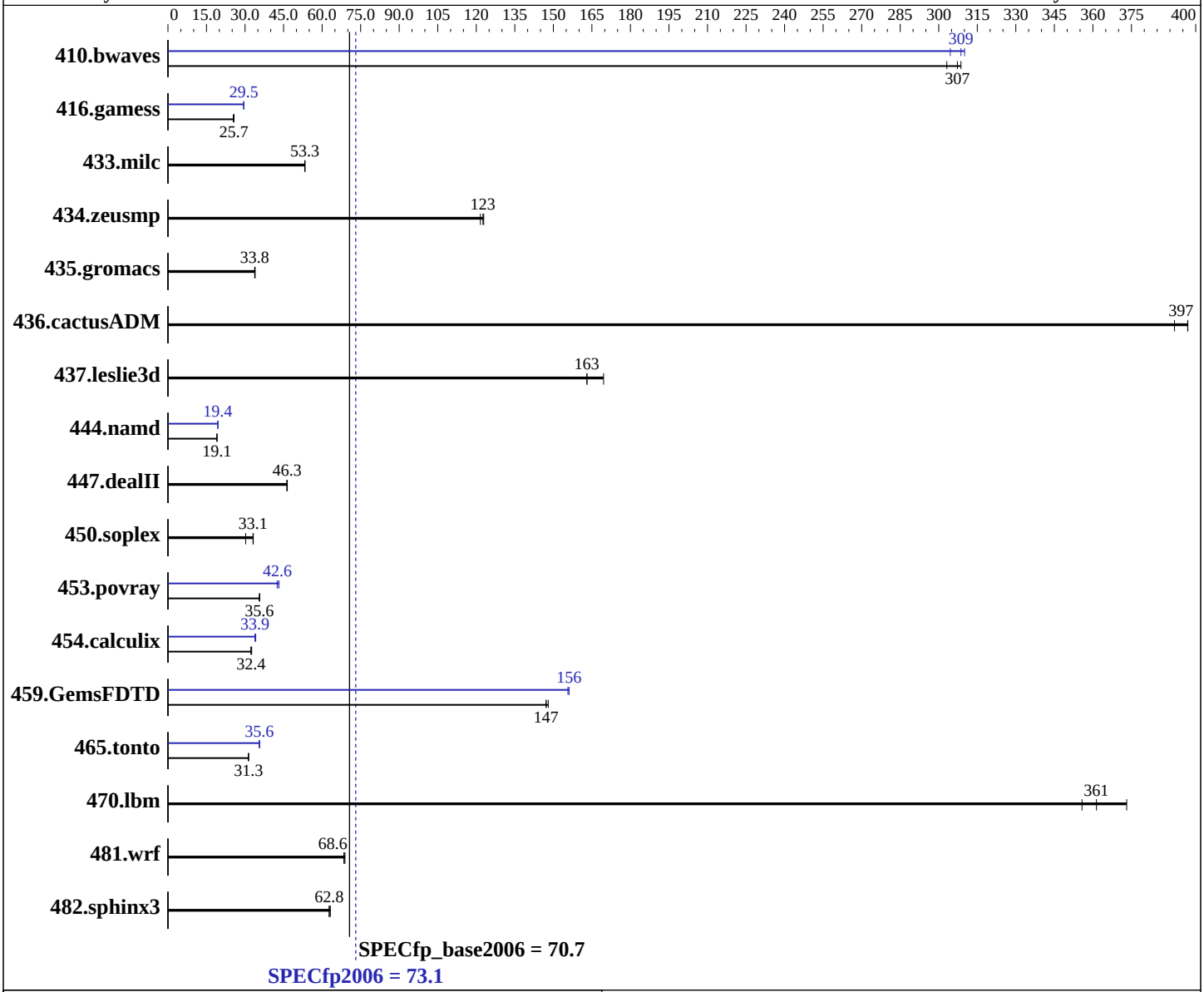
Huawei RH1288 V2 (Intel Xeon E5-2630 2.30 GHz)

SPECfp®2006 = 73.1

SPECfp_base2006 = 70.7

**CPU2006 license:** 3175
**Test sponsor:** Huawei
**Tested by:** Huawei

**Test date:** Jun-2013
**Hardware Availability:** May-2012
**Software Availability:** Feb-2013




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-2630 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 2.80 GHz |
| CPU MHz: | 2300 |
| FPU: | Integrated |
| CPU(s) enabled: | 12 cores, 2 chips, 6 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)<br>2.6.32-358.el6.x86_64 |
| Compiler: | C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux;<br>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: 15 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem: 1 x 500 GB SATA, 7200 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 | 44.0 | 309 | 44.8 | 303 | **44.2** | **307** | 44.6 | 304 | 43.8 | 310 | **44.0** | **309** |
| 416.gamess | 761 | 25.7 | 770 | 25.4 | **762** | **25.7** | **663** | **29.5** | 665 | 29.5 | 663 | 29.5 |
| 433.milc | 172 | 53.2 | **172** | **53.3** | 172 | 53.4 | 172 | 53.2 | **172** | **53.3** | 172 | 53.4 |
| 434.zeusmp | **74.2** | **123** | 74.0 | 123 | 74.8 | 122 | **74.2** | **123** | 74.0 | 123 | 74.8 | 122 |
| 435.gromacs | 211 | 33.8 | **211** | **33.8** | 210 | 33.9 | 211 | 33.8 | **211** | **33.8** | 210 | 33.9 |
| 436.cactusADM | 30.1 | 397 | 30.5 | 392 | **30.1** | **397** | 30.1 | 397 | 30.5 | 392 | **30.1** | **397** |
| 437.leslie3d | **57.6** | **163** | 57.6 | 163 | 55.4 | 170 | **57.6** | **163** | 57.6 | 163 | 55.4 | 170 |
| 444.namd | 420 | 19.1 | **420** | **19.1** | 420 | 19.1 | 413 | 19.4 | **413** | **19.4** | 413 | 19.4 |
| 447.dealII | 246 | 46.5 | 247 | 46.3 | **247** | **46.3** | 246 | 46.5 | 247 | 46.3 | **247** | **46.3** |
| 450.soplex | 251 | 33.2 | **252** | **33.1** | 276 | 30.3 | 251 | 33.2 | **252** | **33.1** | 276 | 30.3 |
| 453.povray | **149** | **35.6** | 149 | 35.7 | 150 | 35.6 | 123 | 43.2 | **125** | **42.6** | 125 | 42.5 |
| 454.calculix | 253 | 32.6 | **255** | **32.4** | 255 | 32.3 | **243** | **33.9** | 243 | 33.9 | 241 | 34.2 |
| 459.GemsFDTD | **72.1** | **147** | 72.1 | 147 | 71.7 | 148 | **68.0** | **156** | 68.2 | 156 | 68.0 | 156 |
| 465.tonto | 314 | 31.3 | 314 | 31.4 | **314** | **31.3** | **277** | **35.6** | 276 | 35.7 | 277 | 35.5 |
| 470.lbm | 36.8 | 373 | 38.6 | 356 | **38.0** | **361** | 36.8 | 373 | 38.6 | 356 | **38.0** | **361** |
| 481.wrf | 163 | 68.5 | 162 | 68.9 | **163** | **68.6** | 163 | 68.5 | 162 | 68.9 | **163** | **68.6** |
| 482.sphinx3 | 311 | 62.7 | 308 | 63.2 | **310** | **62.8** | 311 | 62.7 | 308 | 63.2 | **310** | **62.8** |

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"
Select only test related files when installing the operating system
```

## Platform Notes

```
BIOS configuration:
Set Power Efficiency Mode to Performance
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 Jun  3 23:58:34 2013

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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## Platform Notes (Continued)

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

    From /proc/cpuinfo
       model name : Intel(R) Xeon(R) CPU E5-2630 0 @ 2.30GHz
          2 "physical id"s (chips)
          12 "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 : 6
          siblings  : 6
          physical 0: cores 0 1 2 3 4 5
          physical 1: cores 0 1 2 3 4 5
       cache size : 15360 KB

    From /proc/meminfo
       MemTotal:       132117844 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 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 Jun 3 16:50

    SPEC is set to: /spec
       Filesystem     Type    Size  Used Avail Use% Mounted on
       /dev/sda2      ext4    193G   66G  117G  37% /

    Additional information from dmidecode:

    (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 = "12"

  Binaries compiled on a system with 2 x Xeon X5645 CPU + 16GB memory
  using RHEL 6.1
```

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## General Notes (Continued)

```
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
```

C++ benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias
```

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## Base Optimization Flags (Continued)

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: `basepeak = yes`

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`

447.dealII: `basepeak = yes`

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## Peak Optimization Flags (Continued)

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-revE.20121120.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-revE.20121120.xml

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