# SPEC® CFP2006 Result

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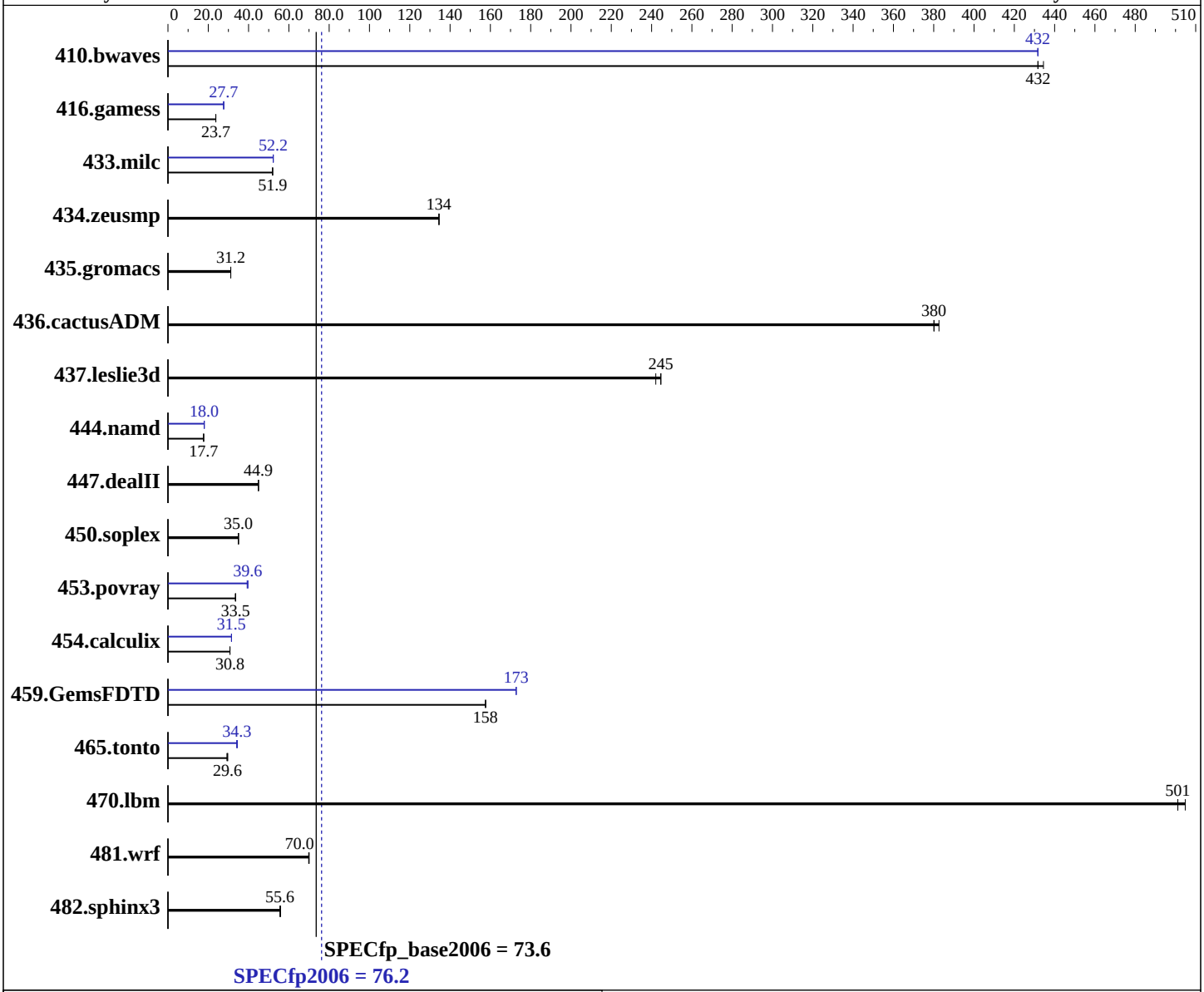
## Huawei
## Huawei CH121

SPECfp®2006 = 76.2

SPECfp_base2006 = 73.6

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

**Test date:** Jun-2014
**Hardware Availability:** Sep-2013
**Software Availability:** Nov-2013




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-2640 v2 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 2.50 GHz |
| CPU MHz: | 2000 |
| FPU: | Integrated |
| CPU(s) enabled: | 16 cores, 2 chips, 8 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)<br>2.6.32-431.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: 20 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, 7200RPM
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 | 31.3 | 434 | **31.5** | **432** | 31.5 | 432 | **31.5** | **432** | 31.5 | 432 | 31.5 | 432 |
| 416.gamess | 825 | 23.7 | 824 | 23.8 | **824** | **23.7** | 707 | 27.7 | **708** | **27.7** | 710 | 27.6 |
| 433.milc | 177 | 51.9 | 177 | 52.0 | **177** | **51.9** | 176 | 52.3 | 176 | 52.2 | **176** | **52.2** |
| 434.zeusmp | 67.7 | 134 | **67.7** | **134** | 67.7 | 134 | 67.7 | 134 | **67.7** | **134** | 67.7 | 134 |
| 435.gromacs | 229 | 31.2 | 229 | 31.2 | **229** | **31.2** | 229 | 31.2 | 229 | 31.2 | **229** | **31.2** |
| 436.cactusADM | 31.2 | 383 | 31.4 | 380 | **31.4** | **380** | 31.2 | 383 | 31.4 | 380 | **31.4** | **380** |
| 437.leslie3d | **38.4** | **245** | 38.4 | 245 | 38.8 | 242 | **38.4** | **245** | 38.4 | 245 | 38.8 | 242 |
| 444.namd | 453 | 17.7 | 453 | 17.7 | **453** | **17.7** | 446 | 18.0 | 445 | 18.0 | **445** | **18.0** |
| 447.dealII | 255 | 44.9 | 255 | 44.9 | **255** | **44.9** | 255 | 44.9 | 255 | 44.9 | **255** | **44.9** |
| 450.soplex | **238** | **35.0** | 238 | 35.0 | 239 | 35.0 | **238** | **35.0** | 238 | 35.0 | 239 | 35.0 |
| 453.povray | **159** | **33.5** | 158 | 33.6 | 159 | 33.5 | **134** | **39.6** | 134 | 39.7 | 135 | 39.3 |
| 454.calculix | 268 | 30.8 | **268** | **30.8** | 268 | 30.8 | **262** | **31.5** | 262 | 31.5 | 262 | 31.5 |
| 459.GemsFDTD | 67.3 | 158 | **67.3** | **158** | 67.3 | 158 | 61.4 | 173 | **61.4** | **173** | 61.4 | 173 |
| 465.tonto | 332 | 29.6 | **332** | **29.6** | 336 | 29.3 | 286 | 34.4 | 289 | 34.1 | **287** | **34.3** |
| 470.lbm | **27.4** | **501** | 27.2 | 505 | 27.4 | 501 | **27.4** | **501** | 27.2 | 505 | 27.4 | 501 |
| 481.wrf | 160 | 69.8 | **160** | **70.0** | 160 | 70.0 | 160 | 69.8 | **160** | **70.0** | 160 | 70.0 |
| 482.sphinx3 | **350** | **55.6** | 350 | 55.6 | 349 | 55.9 | **350** | **55.6** | 350 | 55.6 | 349 | 55.9 |

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

```
Sysinfo program /spec/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on localhost.localdomain Sun Jun  1 22:50:04 2014

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 E5-2640 v2 @ 2.00GHz
```

Continued on next page

## Platform Notes (Continued)

```
        2 "physical id"s (chips)
        16 "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 : 8
        siblings  : 8
        physical 0: cores 0 1 2 3 4 5 6 7
        physical 1: cores 0 1 2 3 4 5 6 7
     cache size : 20480 KB

  From /proc/meminfo
     MemTotal:       132105680 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.localdomain 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 Jun 1 11:00

  SPEC is set to: /spec
     Filesystem     Type  Size  Used Avail Use% Mounted on
     /dev/sda2      ext4  265G   93G  159G  37% /

  Additional information from dmidecode:
    Memory:
     16x Micron 36JSF1G72PZ-1G6K1 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 = "16"

  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
```

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

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

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## Peak Optimization Flags (Continued)

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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