# SPEC® CFP2006 Result

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## Hewlett-Packard Company

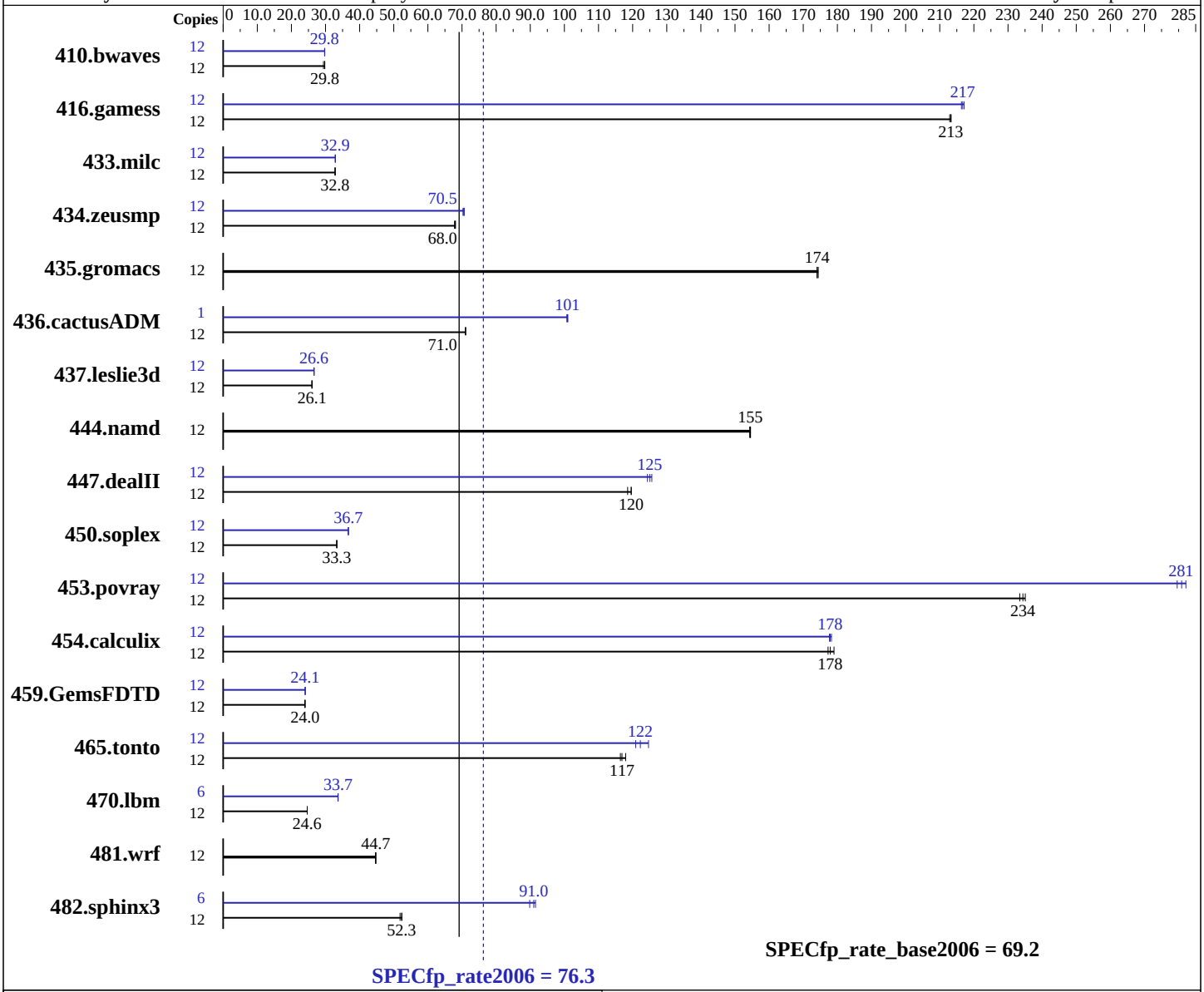
ProLiant BL680c G5
(2.4 GHz, Intel Xeon E7458)

**SPECfp®_rate2006 = 76.3**

**SPECfp_rate_base2006 = 69.2**

**CPU2006 license:** 3
**Test sponsor:** Hewlett-Packard Company
**Tested by:** Hewlett-Packard Company

**Test date:** Apr-2009
**Hardware Availability:** Apr-2009
**Software Availability:** Apr-2009




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E7458 |
| CPU Characteristics: | 2.4 GHz, 16 MB L3 shared, 1066 MHz system bus |
| CPU MHz: | 2400 |
| FPU: | Integrated |
| CPU(s) enabled: | 12 cores, 2 chips, 6 cores/chip |
| CPU(s) orderable: | 2,4 chips |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 9 MB I+D on chip per chip, 3 MB shared / 2 cores |

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### Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 5.3, Kernel 2.6.18-128.el5 on an x86_64 |
| Compiler: | Intel C++ and Fortran Compiler 11.0 for Linux Build 20080730 Package ID: l_cproc_b_11.0.074 l_cprof_b_11.0.074 |
| Auto Parallel: | Yes |
| File System: | ext3 |
| System State: | Run level 3 (multi-user) |

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L3 Cache: 16 MB I+D on chip per chip
Other Cache: None
Memory: 64 GB (16x4 GB PC2-5300F CL5)
Disk Subsystem: 1x146 GB 10 K SAS
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: Binutils-2.17.50

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 12 | 5546 | 29.4 | 5476 | 29.8 | **5479** | **29.8** | 12 | 5487 | 29.7 | **5481** | **29.8** | 5476 | 29.8 |
| 416.gamess | 12 | **1102** | **213** | 1104 | 213 | 1101 | 213 | 12 | **1084** | **217** | 1086 | 216 | 1082 | 217 |
| 433.milc | 12 | 3356 | 32.8 | **3358** | **32.8** | 3359 | 32.8 | 12 | 3353 | 32.9 | **3351** | **32.9** | 3350 | 32.9 |
| 434.zeusmp | 12 | 1611 | 67.8 | **1606** | **68.0** | 1603 | 68.1 | 12 | 1545 | 70.7 | 1554 | 70.3 | **1549** | **70.5** |
| 435.gromacs | 12 | 492 | 174 | 491 | 174 | **492** | **174** | 12 | 492 | 174 | 491 | 174 | **492** | **174** |
| 436.cactusADM | 12 | **2019** | **71.0** | 2018 | 71.1 | 2020 | 71.0 | 1 | 119 | 101 | 118 | 101 | **118** | **101** |
| 437.leslie3d | 12 | 4346 | 26.0 | **4325** | **26.1** | 4319 | 26.1 | 12 | 4234 | 26.6 | 4237 | 26.6 | **4235** | **26.6** |
| 444.namd | 12 | **623** | **155** | 623 | 155 | 624 | 154 | 12 | **623** | **155** | 623 | 155 | 624 | 154 |
| 447.dealII | 12 | **1148** | **120** | 1158 | 119 | 1148 | 120 | 12 | **1098** | **125** | 1093 | 126 | 1104 | 124 |
| 450.soplex | 12 | 3006 | 33.3 | 3004 | 33.3 | **3006** | **33.3** | 12 | 2726 | 36.7 | 2729 | 36.7 | **2729** | **36.7** |
| 453.povray | 12 | 273 | 233 | 272 | 235 | **272** | **234** | 12 | 226 | 282 | **227** | **281** | 228 | 280 |
| 454.calculix | 12 | 553 | 179 | **556** | **178** | 558 | 177 | 12 | 557 | 178 | 555 | 178 | **557** | **178** |
| 459.GemsFDTD | 12 | 5321 | 23.9 | **5306** | **24.0** | 5300 | 24.0 | 12 | 5294 | 24.1 | 5292 | 24.1 | **5293** | **24.1** |
| 465.tonto | 12 | **1010** | **117** | 1014 | 116 | 1001 | 118 | 12 | **966** | **122** | 977 | 121 | 947 | 125 |
| 470.lbm | 12 | 6692 | 24.6 | **6692** | **24.6** | 6690 | 24.6 | 6 | 2451 | 33.6 | **2448** | **33.7** | 2447 | 33.7 |
| 481.wrf | 12 | 3002 | 44.7 | 2996 | 44.7 | **2998** | **44.7** | 12 | 3002 | 44.7 | 2996 | 44.7 | **2998** | **44.7** |
| 482.sphinx3 | 12 | **4472** | **52.3** | 4512 | 51.8 | 4467 | 52.4 | 6 | 1278 | 91.5 | **1285** | **91.0** | 1302 | 89.8 |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

```
The config file option 'submit' was used.
```

## Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
'/usr/bin/taskset' used to bind processes to CPUs
 OMP_NUM_THREADS set to number of cores
 KMP_AFFINITY set to physical,0
 KMP_STACKSIZE set to 64M
```

## Platform Notes

```
BIOS configuration:
  Power Effeciency Mode set to Performance Mode
  Adjacent Sector Prefetch Disabled
  Hardware Prefetcher Disabled
```

## Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
icc ifort

## 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:
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

C++ benchmarks:
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

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## Base Optimization Flags (Continued)

Fortran benchmarks:
`-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch`

Benchmarks using both Fortran and C:
`-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch`

## Peak Compiler Invocation

C benchmarks (except as noted below):
`/opt/intel/Compiler/11.0/074/bin/ia32/icc`
`-L/opt/intel/Compiler/11.0/074/ipp/ia32/lib`
`-I/opt/intel/Compiler/11.0/074/ipp/ia32/include`

433.milc: `icc`

C++ benchmarks (except as noted below):
`icpc`

450.soplex: `/opt/intel/Compiler/11.0/074/bin/ia32/icpc`
`-L/opt/intel/Compiler/11.0/074/ipp/ia32/lib`
`-I/opt/intel/Compiler/11.0/074/ipp/ia32/include`

Fortran benchmarks (except as noted below):
`ifort`

437.leslie3d: `/opt/intel/Compiler/11.0/074/bin/ia32/ifort`
`-L/opt/intel/Compiler/11.0/074/ipp/ia32/lib`
`-I/opt/intel/Compiler/11.0/074/ipp/ia32/include`

Benchmarks using both Fortran and C:
`icc ifort`

## Peak 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`
444.namd: `-DSPEC_CPU_LP64`
447.dealII: `-DSPEC_CPU_LP64`
453.povray: `-DSPEC_CPU_LP64`
454.calculix: `-DSPEC_CPU_LP64 -nofor_main`
459.GemsFDTD: `-DSPEC_CPU_LP64`

Continued on next page

## Peak Portability Flags (Continued)

465.tonto: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX

## Peak Optimization Flags

C benchmarks:

433.milc: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -fno-alias

470.lbm: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll2 -scalar-rep- -opt-prefetch
-opt-malloc-options=3

482.sphinx3: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2

C++ benchmarks:

444.namd: basepeak = yes

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll2 -ansi-alias -scalar-rep-

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll2 -Ob0 -ansi-alias
-scalar-rep-

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -opt-malloc-options=3 -opt-prefetch

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll2 -Ob0 -opt-prefetch

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll4 -auto

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# Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2 -opt-prefetch -parallel -auto-ilp32

454.calculix: -xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20090710.html
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090710.13.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20090710.xml
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090710.13.xml


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