



# SPEC® CFP2006 Result

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## Hewlett-Packard Company

### SPECfp®\_rate2006 = 15.6

HP BladeSystem bc2500 Blade PC  
(1.6GHz AMD Athlon 64 X2 3000+)

### SPECfp\_rate\_base2006 = 14.7

CPU2006 license: 3

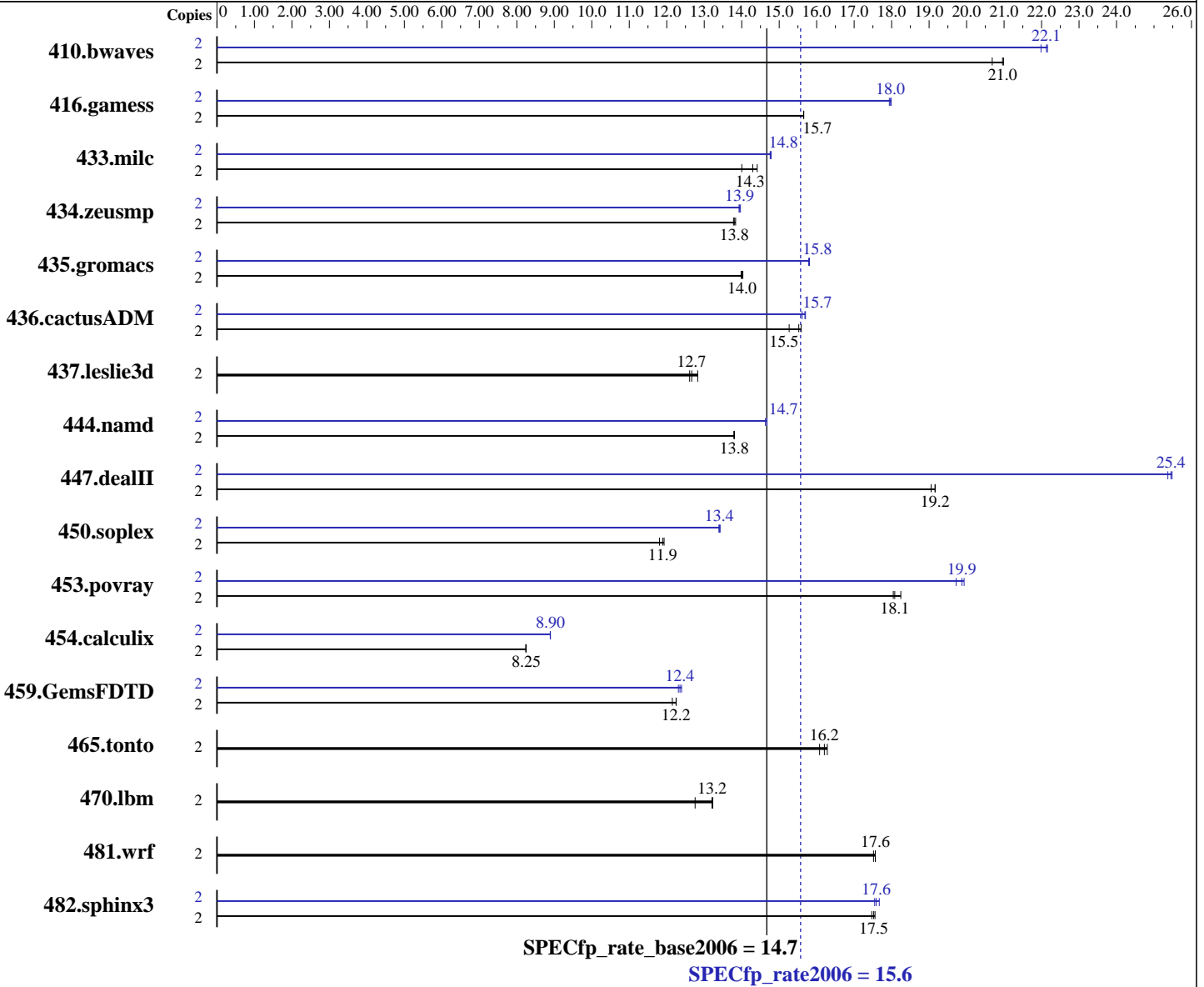
Test date: Dec-2007

Test sponsor: Hewlett-Packard Company

Hardware Availability: Jun-2007

Tested by: AMD Performance Labs

Software Availability: Mar-2008



### Hardware

CPU Name: AMD Athlon 64 X2 3000+  
 CPU Characteristics:  
 CPU MHz: 1600  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip  
 CPU(s) orderable: 1 chip  
 Primary Cache: 64 KB I + 64 KB D on chip per core  
 Secondary Cache: 512 KB I+D on chip per core

Continued on next page

### Software

Operating System: SUSE Linux Enterprise Server 10 (x86\_64) SP1,  
Kernel 2.6.16.46-0.12-smp  
 Compiler: QLogic PathScale  
Compiler Suite, Release 3.0  
 Auto Parallel: No  
 File System: ext3  
 System State: Multi-user, run level 3  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit

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L3 Cache: None  
Other Cache: None  
Memory: 4 GB (2x2GB, DDR2-667 CL5 ECC Reg Dual Rank)  
Disk Subsystem: 1x80 GB SATA, 5400 RPM  
Other Hardware: None

Other Software: None

## Results Table

| Benchmark     | Base   |                    |                    |                    |                    |                    |                    | Peak   |         |       |                    |                    |                    |                    |
|---------------|--------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------|---------|-------|--------------------|--------------------|--------------------|--------------------|
|               | Copies | Seconds            | Ratio              | Seconds            | Ratio              | Seconds            | Ratio              | Copies | Seconds | Ratio | Seconds            | Ratio              | Seconds            | Ratio              |
| 410.bwaves    | 2      | 1314               | 20.7               | 1295               | 21.0               | <b><u>1297</u></b> | <b><u>21.0</u></b> | 2      | 1227    | 22.2  | <b><u>1228</u></b> | <b><u>22.1</u></b> | 1236               | 22.0               |
| 416.gamess    | 2      | 2502               | 15.7               | <b><u>2502</u></b> | <b><u>15.7</u></b> | 2501               | 15.7               | 2      | 2183    | 17.9  | 2177               | 18.0               | <b><u>2179</u></b> | <b><u>18.0</u></b> |
| 433.milc      | 2      | 1311               | 14.0               | <b><u>1284</u></b> | <b><u>14.3</u></b> | 1274               | 14.4               | 2      | 1244    | 14.8  | 1242               | 14.8               | <b><u>1243</u></b> | <b><u>14.8</u></b> |
| 434.zeusmp    | 2      | 1321               | 13.8               | <b><u>1319</u></b> | <b><u>13.8</u></b> | 1315               | 13.8               | 2      | 1303    | 14.0  | 1307               | 13.9               | <b><u>1305</u></b> | <b><u>13.9</u></b> |
| 435.gromacs   | 2      | 1018               | 14.0               | <b><u>1019</u></b> | <b><u>14.0</u></b> | 1021               | 14.0               | 2      | 905     | 15.8  | 903                | 15.8               | <b><u>903</u></b>  | <b><u>15.8</u></b> |
| 436.cactusADM | 2      | 1566               | 15.3               | <b><u>1540</u></b> | <b><u>15.5</u></b> | 1533               | 15.6               | 2      | 1522    | 15.7  | 1531               | 15.6               | <b><u>1524</u></b> | <b><u>15.7</u></b> |
| 437.leslie3d  | 2      | 1491               | 12.6               | <b><u>1484</u></b> | <b><u>12.7</u></b> | 1466               | 12.8               | 2      | 1491    | 12.6  | <b><u>1484</u></b> | <b><u>12.7</u></b> | 1466               | 12.8               |
| 444.namd      | 2      | <b><u>1162</u></b> | <b><u>13.8</u></b> | 1163               | 13.8               | 1162               | 13.8               | 2      | 1096    | 14.6  | 1093               | 14.7               | <b><u>1093</u></b> | <b><u>14.7</u></b> |
| 447.dealII    | 2      | 1201               | 19.1               | <b><u>1194</u></b> | <b><u>19.2</u></b> | 1194               | 19.2               | 2      | 898     | 25.5  | <b><u>899</u></b>  | <b><u>25.4</u></b> | 902                | 25.4               |
| 450.soplex    | 2      | 1413               | 11.8               | <b><u>1403</u></b> | <b><u>11.9</u></b> | 1398               | 11.9               | 2      | 1242    | 13.4  | <b><u>1244</u></b> | <b><u>13.4</u></b> | 1246               | 13.4               |
| 453.povray    | 2      | <b><u>588</u></b>  | <b><u>18.1</u></b> | 583                | 18.2               | 590                | 18.0               | 2      | 540     | 19.7  | 534                | 19.9               | <b><u>535</u></b>  | <b><u>19.9</u></b> |
| 454.calculix  | 2      | 2000               | 8.25               | <b><u>2000</u></b> | <b><u>8.25</u></b> | 2003               | 8.24               | 2      | 1855    | 8.90  | <b><u>1855</u></b> | <b><u>8.90</u></b> | 1856               | 8.89               |
| 459.GemsFDTD  | 2      | <b><u>1732</u></b> | <b><u>12.2</u></b> | 1732               | 12.3               | 1747               | 12.1               | 2      | 1724    | 12.3  | 1712               | 12.4               | <b><u>1718</u></b> | <b><u>12.4</u></b> |
| 465.tonto     | 2      | 1224               | 16.1               | 1209               | 16.3               | <b><u>1214</u></b> | <b><u>16.2</u></b> | 2      | 1224    | 16.1  | 1209               | 16.3               | <b><u>1214</u></b> | <b><u>16.2</u></b> |
| 470.lbm       | 2      | 2154               | 12.8               | <b><u>2081</u></b> | <b><u>13.2</u></b> | 2077               | 13.2               | 2      | 2154    | 12.8  | <b><u>2081</u></b> | <b><u>13.2</u></b> | 2077               | 13.2               |
| 481.wrf       | 2      | 1275               | 17.5               | 1272               | 17.6               | <b><u>1272</u></b> | <b><u>17.6</u></b> | 2      | 1275    | 17.5  | 1272               | 17.6               | <b><u>1272</u></b> | <b><u>17.6</u></b> |
| 482.sphinx3   | 2      | <b><u>2225</u></b> | <b><u>17.5</u></b> | 2220               | 17.6               | 2231               | 17.5               | 2      | 2221    | 17.5  | 2206               | 17.7               | <b><u>2216</u></b> | <b><u>17.6</u></b> |

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

## General Notes

taskset utility used to bind cores to processes

## Base Compiler Invocation

C benchmarks:  
pathcc

C++ benchmarks:  
pathCC

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## Base Compiler Invocation (Continued)

Fortran benchmarks:  
pathf95

Benchmarks using both Fortran and C:  
pathcc pathf95

## 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
436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
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
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX -fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64

```

## Base Optimization Flags

```

C benchmarks:
-Ofast

C++ benchmarks:
-Ofast

Fortran benchmarks:
-Ofast -OPT:malloc_alg=1

Benchmarks using both Fortran and C:
-Ofast -OPT:malloc_alg=1

```

## Peak Compiler Invocation

C benchmarks:  
pathcc

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## Peak Compiler Invocation (Continued)

C++ benchmarks:  
pathCC

Fortran benchmarks:  
pathf95

Benchmarks using both Fortran and C:  
pathcc pathf95

## 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
436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX -fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64

```

## Peak Optimization Flags

C benchmarks:

```

433.milc: -Ofast -CG:cflow=off -LNO:prefetch=1 -OPT:malloc_alg=1
470.lbm: basepeak = yes
482.sphinx3: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O3
-OPT:Ofast -WOPT:aggstr=0 -m32

```

C++ benchmarks:

```

444.namd: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
-fno-exceptions
447.dealII: -Ofast -INLINE:aggressive=on -OPT:malloc_alg=1 -m32
-fno-exceptions

```

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## Peak Optimization Flags (Continued)

450.soplex: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -m32 -O3  
-OPT:IEEE\_arith=3 -CG:load\_exe=0 -CG:movnti=1  
-LNO:minvariant=off -LNO:prefetch=1 -fno-exceptions

453.povray: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast  
-fno-fast-math

### Fortran benchmarks:

410.bwaves: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-OPT:Ofast -OPT:IEEE\_arith=3 -LNO:blocking=off  
-LNO:ignore\_feedback=off

416.gamess: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O2  
-OPT:Ofast -OPT:ro=3 -OPT:unroll\_size=256

434.zeusmp: -Ofast -CG:local\_fwd\_sched=on -LNO:blocking=off  
-LNO:interchange=off -LNO:fu=10 -LNO:full\_unroll\_outer=on

437.leslie3d: basepeak = yes

459.GemsFDTD: -Ofast -LNO:fission=2 -LNO:prefetch=0

465.tonto: basepeak = yes

### Benchmarks using both Fortran and C:

435.gromacs: -O3 -OPT:rsqrt=2 -OPT:ro=3

436.cactusADM: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-LNO:prefetch=3 -LNO:prefetch\_ahead=5 -LNO:ou\_prod\_max=10  
-LNO:full\_unroll=5 -ipa

454.calculix: -Ofast -LNO:simd=0 -WOPT:mem\_opnds=on

481.wrf: basepeak = yes

## Peak Other Flags

### C++ benchmarks:

447.dealIII: -static

The flags file that was used to format this result can be browsed at

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090714.html](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.html)



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You can also download the XML flags source by saving the following link:

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090714.xml](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.xml)

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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