



SPEC® CFP2006 Result

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Hewlett-Packard Company

SPECfp®2006 = 22.3

ProLiant BL460c
(2.83 GHz, Intel Xeon E5440)

SPECfp_base2006 = 18.9

CPU2006 license: 3

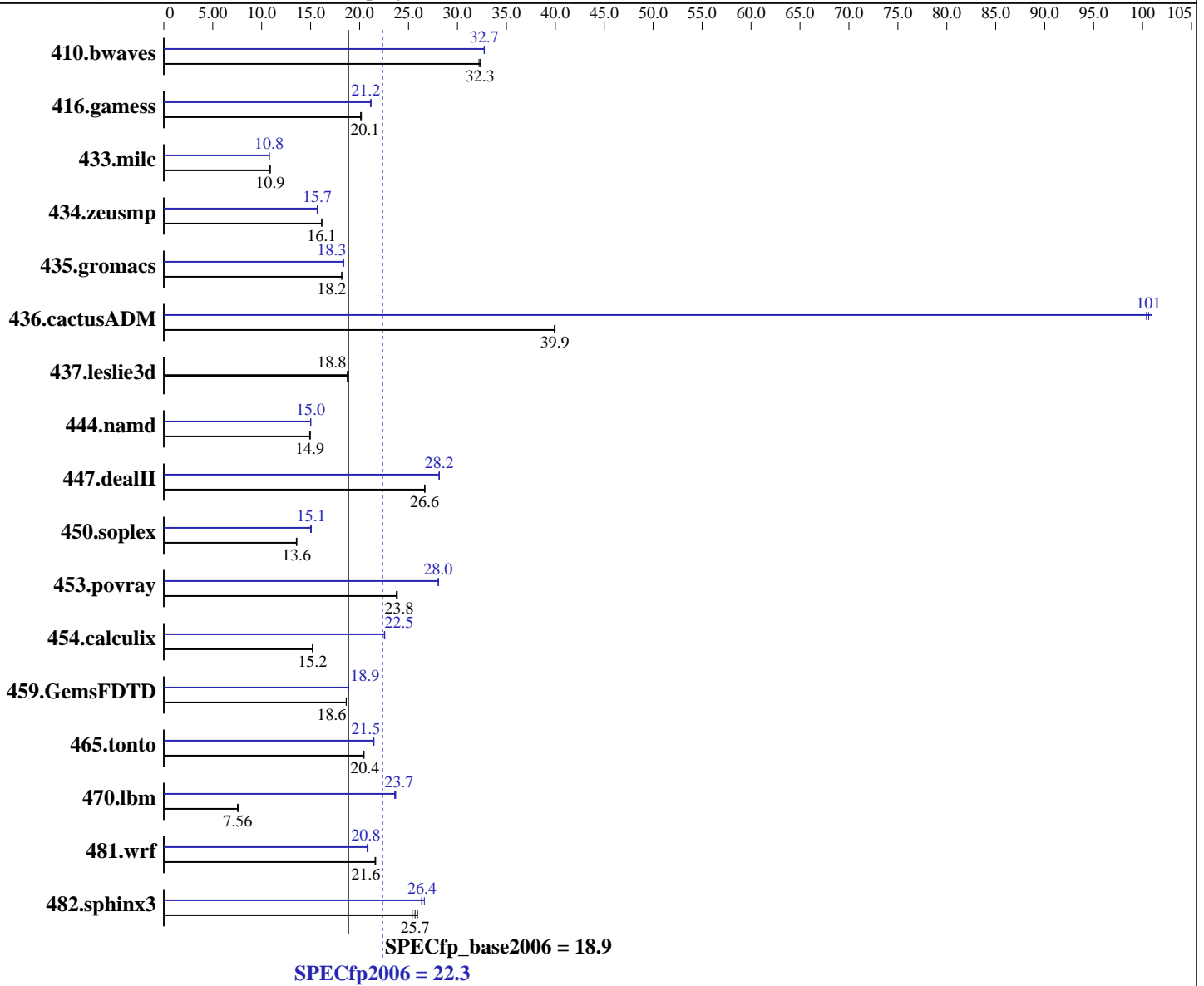
Test date: Feb-2008

Test sponsor: Hewlett-Packard Company

Hardware Availability: Nov-2007

Tested by: Hewlett-Packard Company

Software Availability: Nov-2007



Hardware

CPU Name: Intel Xeon E5440
 CPU Characteristics: 2.83 GHz, 2x6 MB L2 shared, 1333 MHz system bus
 CPU MHz: 2833
 FPU: Integrated
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip
 CPU(s) orderable: 1,2 chips
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 12 MB I+D on chip per chip, 6 MB shared / 2 cores

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Software

Operating System: SUSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp
 Compiler: Intel C++ Compiler 10.1 for Linux Build 20070913 Package ID: l_cc_p_10.1.008
 Intel Fortran Compiler 10.1 for Linux Build 20070913 Package ID: l_cc_p_10.1.008
 Auto Parallel: Yes
 File System: ext2
 System State: Run level 3 (multi-user)

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L3 Cache: None
Other Cache: None
Memory: 16 GB (8x2 GB PC2-5300F CL5)
Disk Subsystem: 1x72 GB 15 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 | | | | | |
|---------------|-------------------|--------------------|--------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 422 | 32.2 | <u>421</u> | <u>32.3</u> | 419 | 32.4 | 415 | 32.8 | 415 | 32.7 | <u>415</u> | <u>32.7</u> |
| 416.gamess | 970 | 20.2 | <u>973</u> | <u>20.1</u> | 973 | 20.1 | 925 | 21.2 | 927 | 21.1 | <u>925</u> | <u>21.2</u> |
| 433.milc | 844 | 10.9 | <u>845</u> | <u>10.9</u> | 846 | 10.8 | 854 | 10.8 | <u>853</u> | <u>10.8</u> | 851 | 10.8 |
| 434.zeusmp | 564 | 16.1 | <u>564</u> | <u>16.1</u> | 564 | 16.1 | 581 | 15.7 | 580 | 15.7 | <u>580</u> | <u>15.7</u> |
| 435.gromacs | 390 | 18.3 | <u>393</u> | <u>18.2</u> | 393 | 18.2 | <u>390</u> | <u>18.3</u> | 388 | 18.4 | 390 | 18.3 |
| 436.cactusADM | <u>299</u> | <u>39.9</u> | 300 | 39.9 | 299 | 40.0 | <u>119</u> | <u>101</u> | 118 | 101 | 119 | 100 |
| 437.leslie3d | 498 | 18.9 | <u>500</u> | <u>18.8</u> | 501 | 18.7 | 498 | 18.9 | <u>500</u> | <u>18.8</u> | 501 | 18.7 |
| 444.namd | 535 | 15.0 | <u>538</u> | <u>14.9</u> | 538 | 14.9 | <u>534</u> | <u>15.0</u> | 535 | 15.0 | 534 | 15.0 |
| 447.dealII | 429 | 26.7 | 430 | 26.6 | <u>429</u> | <u>26.6</u> | <u>406</u> | <u>28.2</u> | 406 | 28.2 | 407 | 28.1 |
| 450.soplex | 614 | 13.6 | <u>615</u> | <u>13.6</u> | 616 | 13.5 | 556 | 15.0 | <u>554</u> | <u>15.1</u> | 553 | 15.1 |
| 453.povray | <u>224</u> | <u>23.8</u> | 224 | 23.8 | 223 | 23.9 | 190 | 28.0 | <u>190</u> | <u>28.0</u> | 190 | 28.1 |
| 454.calculix | 542 | 15.2 | <u>543</u> | <u>15.2</u> | 543 | 15.2 | 365 | 22.6 | 366 | 22.5 | <u>366</u> | <u>22.5</u> |
| 459.GemsFDTD | <u>569</u> | <u>18.6</u> | 569 | 18.6 | 569 | 18.6 | 562 | 18.9 | <u>562</u> | <u>18.9</u> | 562 | 18.9 |
| 465.tonto | <u>482</u> | <u>20.4</u> | 481 | 20.5 | 483 | 20.4 | 458 | 21.5 | 460 | 21.4 | <u>459</u> | <u>21.5</u> |
| 470.lbm | 1810 | 7.59 | <u>1818</u> | <u>7.56</u> | 1824 | 7.53 | 583 | 23.6 | <u>581</u> | <u>23.7</u> | 580 | 23.7 |
| 481.wrf | <u>517</u> | <u>21.6</u> | 516 | 21.7 | 517 | 21.6 | 538 | 20.8 | <u>536</u> | <u>20.8</u> | 535 | 20.9 |
| 482.sphinx3 | 768 | 25.4 | 752 | 25.9 | <u>759</u> | <u>25.7</u> | <u>739</u> | <u>26.4</u> | 732 | 26.6 | 740 | 26.3 |

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

Operating System Notes

'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to physical,0
KMP_STACKSIZE set to 200M

Platform Notes

BIOS configuration:
Power Regulator set to Static High Performance Mode



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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:

-fast -parallel

C++ benchmarks:

-fast -parallel

Fortran benchmarks:

-fast -parallel

Benchmarks using both Fortran and C:

-fast -parallel



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Peak Compiler Invocation

C benchmarks (except as noted below):

```
/opt/intel/cc/10.1.008/bin/icc -L/opt/intel/cc/10.1.008/lib
-I/opt/intel/cc/10.1.008/include
```

433.milc: icc

C++ benchmarks (except as noted below):

icpc

```
450.soplex: /opt/intel/cc/10.1.008/bin/icpc -L/opt/intel/cc/10.1.008/lib
-I/opt/intel/cc/10.1.008/include
```

Fortran benchmarks:

ifort

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
437.leslie3d: -DSPEC_CPU_LP64
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
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) -fast -fno-alias
-auto-ilp32
```

```
470.lbm: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2
-scalar-rep- -prefetch -opt-malloc-options=3
```

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Peak Optimization Flags (Continued)

482.sphinx3: -fast -unroll2

C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias
-auto-ilp32

447.dealIII: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2
-ansi-alias -scalar-rep-

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -fast
-opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4
-ansi-alias

Fortran benchmarks:

410.bwaves: -fast -prefetch -parallel

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0
-ansi-alias -scalar-rep-

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -fast

437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0
-prefetch -parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -auto

Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch
-auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2
-prefetch -parallel -auto-ilp32

454.calculix: -fast -unroll-aggressive -auto-ilp32

481.wrf: -fast -parallel -prefetch -auto-ilp32

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

<http://www.spec.org/cpu2006/flags/HP-Intel-ic10.1-linux-fp-flags.html>

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

<http://www.spec.org/cpu2006/flags/HP-Intel-ic10.1-linux-fp-flags.xml>



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