# SPEC® CFP2006 Result

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## Hewlett-Packard Company

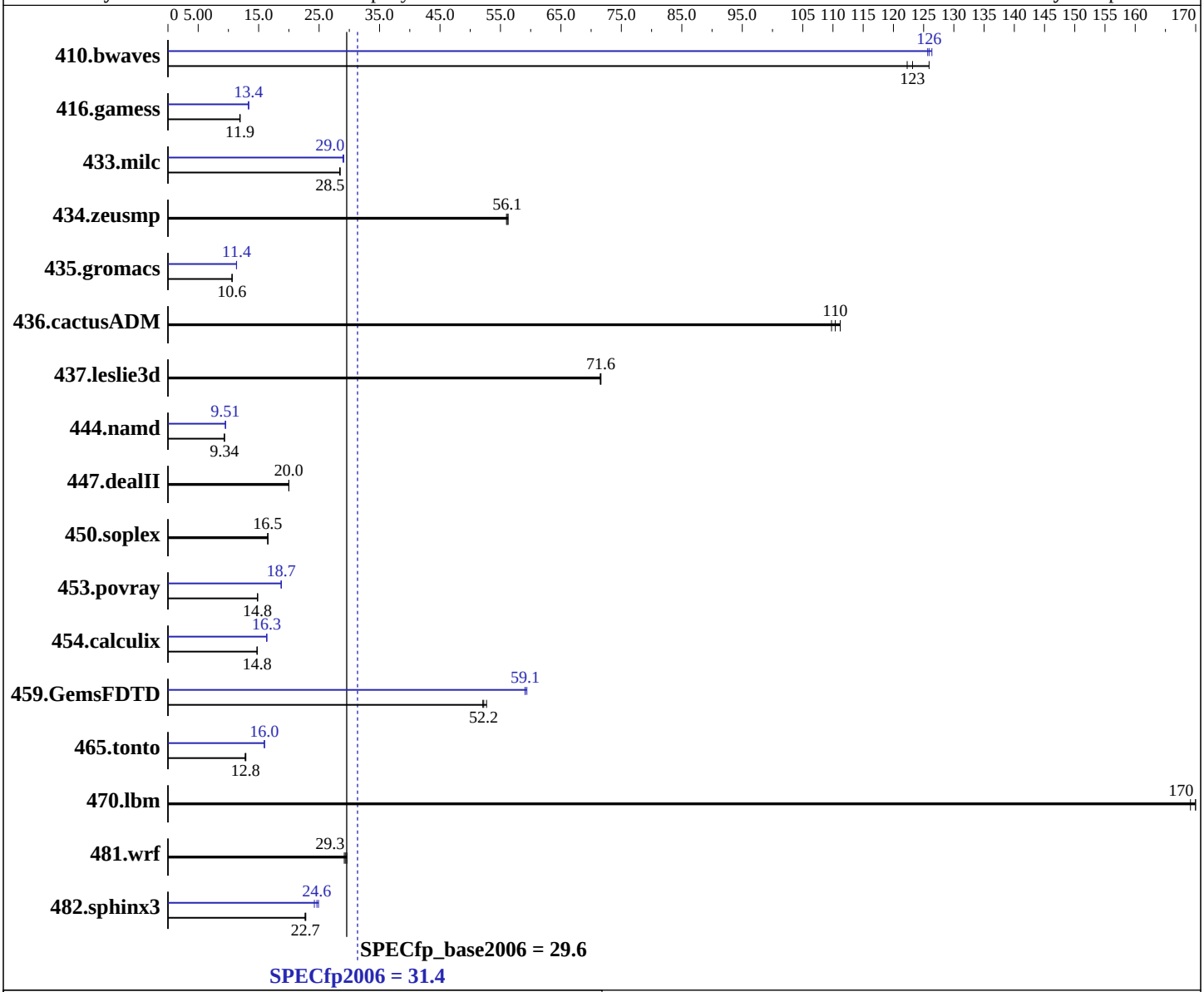
ProLiant DL380 G7
(1.60 GHz, Intel Xeon E5603)

SPECfp®2006 = 31.4

SPECfp_base2006 = 29.6

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

**Test date:** Feb-2011
**Hardware Availability:** Feb-2011
**Software Availability:** Apr-2011




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5603 |
| CPU Characteristics: | |
| CPU MHz: | 1600 |
| 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: | 256 KB I+D on chip per core |

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## Software

| | |
|---|---|
| Operating System: | SUSE Linux Enterprise Server 11 (x86_64) SP1, Kernel 2.6.32.12-0.7-default |
| Compiler: | Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64 Version 12.0 Update 3 |
| Auto Parallel: | Yes |
| File System: | ext3 |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 64-bit |

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L3 Cache: 4 MB I+D on chip per chip
Other Cache: None
Memory: 96 GB (12 x 8 GB 2Rx4 PC3-10600R-9, ECC, running at 1067 MHz)
Disk Subsystem: 1 x 300 GB 10 K SAS
Other Hardware: None

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 | 111 | 122 | **110** | **123** | 108 | 126 | **108** | **126** | 108 | 126 | 108 | 126 |
| 416.gamess | 1638 | 12.0 | **1645** | **11.9** | 1648 | 11.9 | 1466 | 13.4 | 1472 | 13.3 | **1467** | **13.4** |
| 433.milc | 323 | 28.4 | 322 | 28.5 | **323** | **28.5** | 317 | 28.9 | 316 | 29.1 | **316** | **29.0** |
| 434.zeusmp | 162 | 56.3 | 163 | 56.0 | **162** | **56.1** | 162 | 56.3 | 163 | 56.0 | **162** | **56.1** |
| 435.gromacs | 673 | 10.6 | 673 | 10.6 | **673** | **10.6** | **629** | **11.4** | 629 | 11.4 | 630 | 11.3 |
| 436.cactusADM | 109 | 110 | 107 | 111 | **108** | **110** | 109 | 110 | 107 | 111 | **108** | **110** |
| 437.leslie3d | **131** | **71.6** | 131 | 71.6 | 131 | 71.5 | **131** | **71.6** | 131 | 71.6 | 131 | 71.5 |
| 444.namd | 858 | 9.35 | **859** | **9.34** | 860 | 9.32 | 843 | 9.51 | **843** | **9.51** | 843 | 9.51 |
| 447.dealII | 572 | 20.0 | 572 | 20.0 | **572** | **20.0** | 572 | 20.0 | 572 | 20.0 | **572** | **20.0** |
| 450.soplex | 505 | 16.5 | 505 | 16.5 | **505** | **16.5** | 505 | 16.5 | 505 | 16.5 | **505** | **16.5** |
| 453.povray | 359 | 14.8 | **359** | **14.8** | 359 | 14.8 | 284 | 18.7 | **284** | **18.7** | 284 | 18.7 |
| 454.calculix | 560 | 14.7 | 559 | 14.8 | **559** | **14.8** | **505** | **16.3** | 505 | 16.3 | 505 | 16.3 |
| 459.GemsFDTD | **203** | **52.2** | 204 | 52.1 | 201 | 52.7 | 180 | 59.1 | 179 | 59.4 | **180** | **59.1** |
| 465.tonto | 771 | 12.8 | **766** | **12.8** | 763 | 12.9 | **617** | **16.0** | 617 | 15.9 | 616 | 16.0 |
| 470.lbm | 80.8 | 170 | 81.2 | 169 | **80.8** | **170** | 80.8 | 170 | 81.2 | 169 | **80.8** | **170** |
| 481.wrf | 383 | 29.2 | **381** | **29.3** | 377 | 29.6 | 383 | 29.2 | **381** | **29.3** | 377 | 29.6 |
| 482.sphinx3 | 859 | 22.7 | **857** | **22.7** | 855 | 22.8 | 783 | 24.9 | **791** | **24.6** | 805 | 24.2 |

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

## Operating System Notes

```
'nodev   /mnt/hugepages   hugetlbfs   defaults   0 0' added to /etc/fstab
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

## Platform Notes

```
BIOS configuration:
 HP Power Profile set to Maximum Performance
 Thermal Configuration set to Increased Cooling
 Data Reuse set to Disabled
```

## General Notes

```
Binaries were compiled on RHEL5.5
```

## 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:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias
```

C++ benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias
```

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## Base Optimization Flags (Continued)

Fortran benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch`

Benchmarks using both Fortran and C:
`-xSSE4.2 -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: `-xSSE4.2`(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: `-xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias -parallel`

C++ benchmarks:

444.namd: `-xSSE4.2`(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`

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# Peak Optimization Flags (Continued)

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Fortran benchmarks:

410.bwaves: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -parallel
-static

416.gamess: -xSSE4.2(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: -xSSE4.2(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
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

465.tonto: -xSSE4.2(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
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Benchmarks using both Fortran and C:

435.gromacs: -xSSE4.2(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

436.cactusADM: basepeak = yes

454.calculix: -xSSE4.2 -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-ic12.0-linux64-revB.html
http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20110316.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.xml
http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20110316.xml

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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