# SPEC® CFP2006 Result

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## Dell Inc.

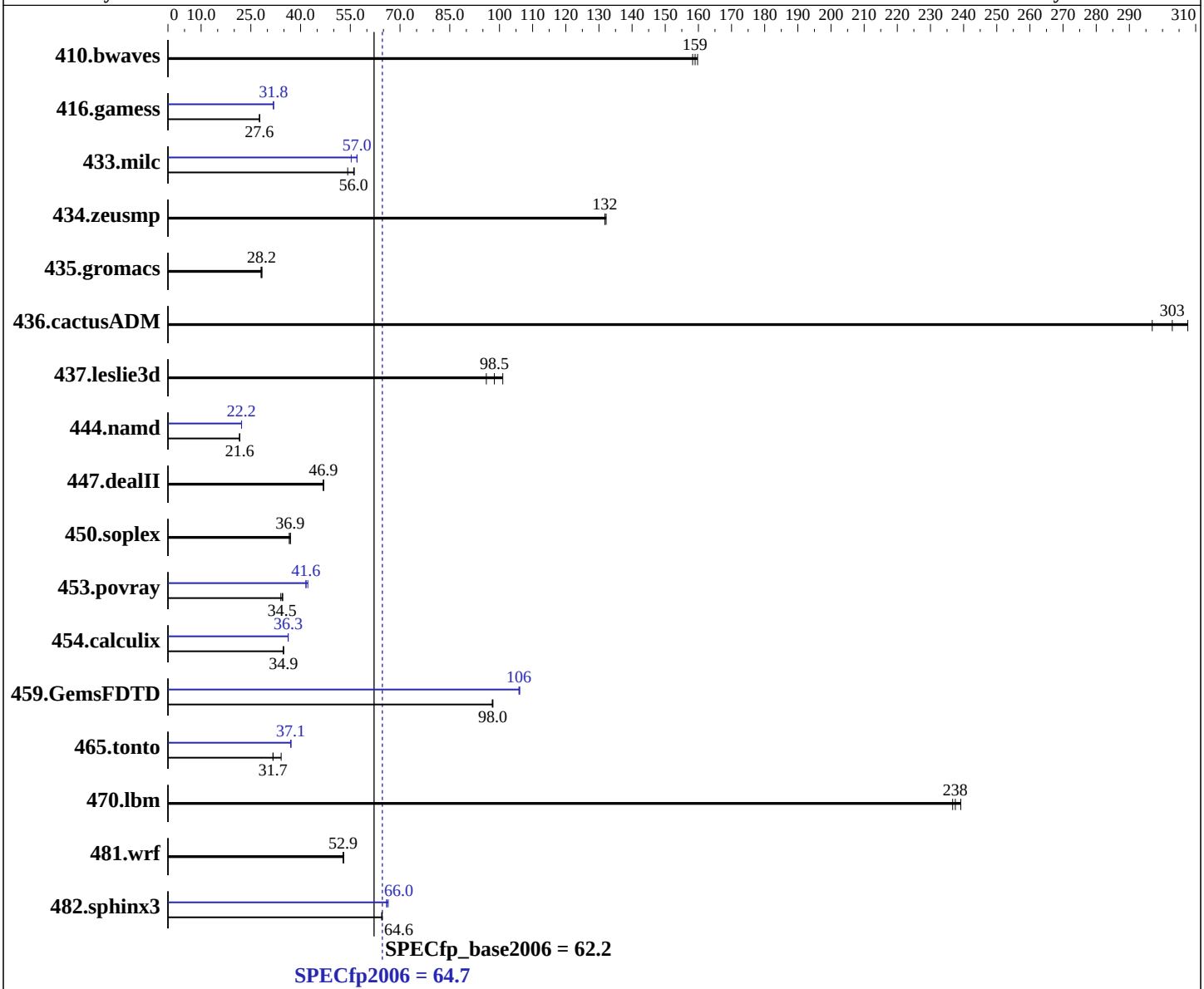
PowerEdge M710 (Intel Xeon X5690, 3.46 GHz)

SPECfp®2006 = 64.7

SPECfp_base2006 = 62.2

**CPU2006 license:** 55
**Test sponsor:** Dell Inc.
**Tested by:** Dell Inc.

**Test date:** Dec-2011
**Hardware Availability:** Feb-2011
**Software Availability:** Oct-2011




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon X5690 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.73 GHz |
| CPU MHz: | 3467 |
| FPU: | Integrated |
| CPU(s) enabled: | 12 cores, 2 chips, 6 cores/chip, 2 threads/core |
| 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: | Red Hat Enterprise Linux Server release 6.1 (Santiago)<br>2.6.32-131.0.15.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: | 12 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 48 GB (6 x 8 GB 2Rx4 PC3-10600R-9, ECC) |
| Disk Subsystem: | 1 x 146 GB 15000 RPM SAS |
| 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 | 85.9 | 158 | **85.5** | **159** | 85.1 | 160 | 85.9 | 158 | **85.5** | **159** | 85.1 | 160 |
| 416.gamess | 709 | 27.6 | 708 | 27.6 | **709** | **27.6** | **615** | **31.8** | 615 | 31.8 | 615 | 31.8 |
| 433.milc | **164** | **56.0** | 163 | 56.2 | 169 | 54.2 | 161 | 57.0 | **161** | **57.0** | 166 | 55.3 |
| 434.zeusmp | 68.8 | 132 | **69.0** | **132** | 69.0 | 132 | 68.8 | 132 | **69.0** | **132** | 69.0 | 132 |
| 435.gromacs | 254 | 28.1 | **253** | **28.2** | 252 | 28.4 | 254 | 28.1 | **253** | **28.2** | 252 | 28.4 |
| 436.cactusADM | 38.8 | 308 | 40.3 | 297 | **39.4** | **303** | 38.8 | 308 | 40.3 | 297 | **39.4** | **303** |
| 437.leslie3d | **95.5** | **98.5** | 97.9 | 96.0 | 93.1 | 101 | **95.5** | **98.5** | 97.9 | 96.0 | 93.1 | 101 |
| 444.namd | 371 | 21.6 | **371** | **21.6** | 371 | 21.6 | 361 | 22.2 | **361** | **22.2** | 361 | 22.2 |
| 447.dealII | **244** | **46.9** | 244 | 47.0 | 244 | 46.8 | **244** | **46.9** | 244 | 47.0 | 244 | 46.8 |
| 450.soplex | **226** | **36.9** | 228 | 36.6 | 226 | 36.9 | **226** | **36.9** | 228 | 36.6 | 226 | 36.9 |
| 453.povray | 154 | 34.6 | 156 | 34.0 | **154** | **34.5** | 126 | 42.2 | 128 | 41.6 | **128** | **41.6** |
| 454.calculix | 237 | 34.9 | **237** | **34.9** | 238 | 34.7 | 227 | 36.3 | 228 | 36.3 | **228** | **36.3** |
| 459.GemsFDTD | 108 | 98.0 | 108 | 97.8 | **108** | **98.0** | **100** | **106** | 100 | 106 | 100 | 106 |
| 465.tonto | **310** | **31.7** | 311 | 31.7 | 288 | 34.1 | 266 | 37.1 | 265 | 37.1 | **266** | **37.1** |
| 470.lbm | 58.1 | 237 | 57.5 | 239 | **57.9** | **238** | 58.1 | 237 | 57.5 | 239 | **57.9** | **238** |
| 481.wrf | 211 | 52.8 | 211 | 53.0 | **211** | **52.9** | 211 | 52.8 | 211 | 53.0 | **211** | **52.9** |
| 482.sphinx3 | **302** | **64.6** | 302 | 64.6 | 302 | 64.5 | 296 | 66.0 | 293 | 66.4 | **295** | **66.0** |

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 /home/CPU2006v1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on M710 Tue Dec 13 19:37:38 2011

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 X5690 @ 3.47GHz
```

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## Platform Notes (Continued)

```
        2 "physical id"s (chips)
        24 "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 : 6
        siblings  : 12
        physical 0: cores 0 1 2 8 9 10
        physical 1: cores 0 1 2 8 9 10
     cache size : 12288 KB

  From /proc/meminfo
     MemTotal:       49413904 kB
     HugePages_Total:       0
     Hugepagesize:       2048 kB

  /usr/bin/lsb_release -d
     Red Hat Enterprise Linux Server release 6.1 (Santiago)

  From /etc/*release* /etc/*version*
     redhat-release: Red Hat Enterprise Linux Server release 6.1 (Santiago)
     system-release: Red Hat Enterprise Linux Server release 6.1 (Santiago)
     system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

  uname -a:
     Linux M710 2.6.32-131.0.15.el6.x86_64 #1 SMP Tue May 10 15:42:40 EDT 2011
     x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Dec 13 19:36

  SPEC is set to: /home/CPU2006v1.2
     Filesystem     Type    Size  Used Avail Use% Mounted on
     /dev/mapper/vg_m710-lv_home
                    ext4     36G  3.7G   31G  11% /home

  Additional information from dmidecode:
    Memory:
     2x 00CE00B380CE M393B1K70BH1-CH9 8 GB 1333 MHz 2 rank
     2x 00CE00B380CE M393B1K70CHD-CH9 8 GB 1333 MHz 2 rank
     2x 00CE04B380CE M393B1K70BH1-CH9 8 GB 1333 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,scatter"
 LD_LIBRARY_PATH = "/home/CPU2006v1.2/libs/32:/home/CPU2006v1.2/libs/64"
 OMP_NUM_THREADS = "12"

  Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
```

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## General Notes (Continued)

```
memory using RHEL5.5
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:
```
-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

Fortran benchmarks:

410.bwaves: basepeak = yes

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

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

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml

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For other inquiries, please contact webmaster@spec.org.

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