# SPEC® CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

## Dell Inc.

PowerEdge T620 (Intel Xeon E5-2620 v2, 2.10 GHz)

$SPECfp^{®}\_rate2006 = $ 382

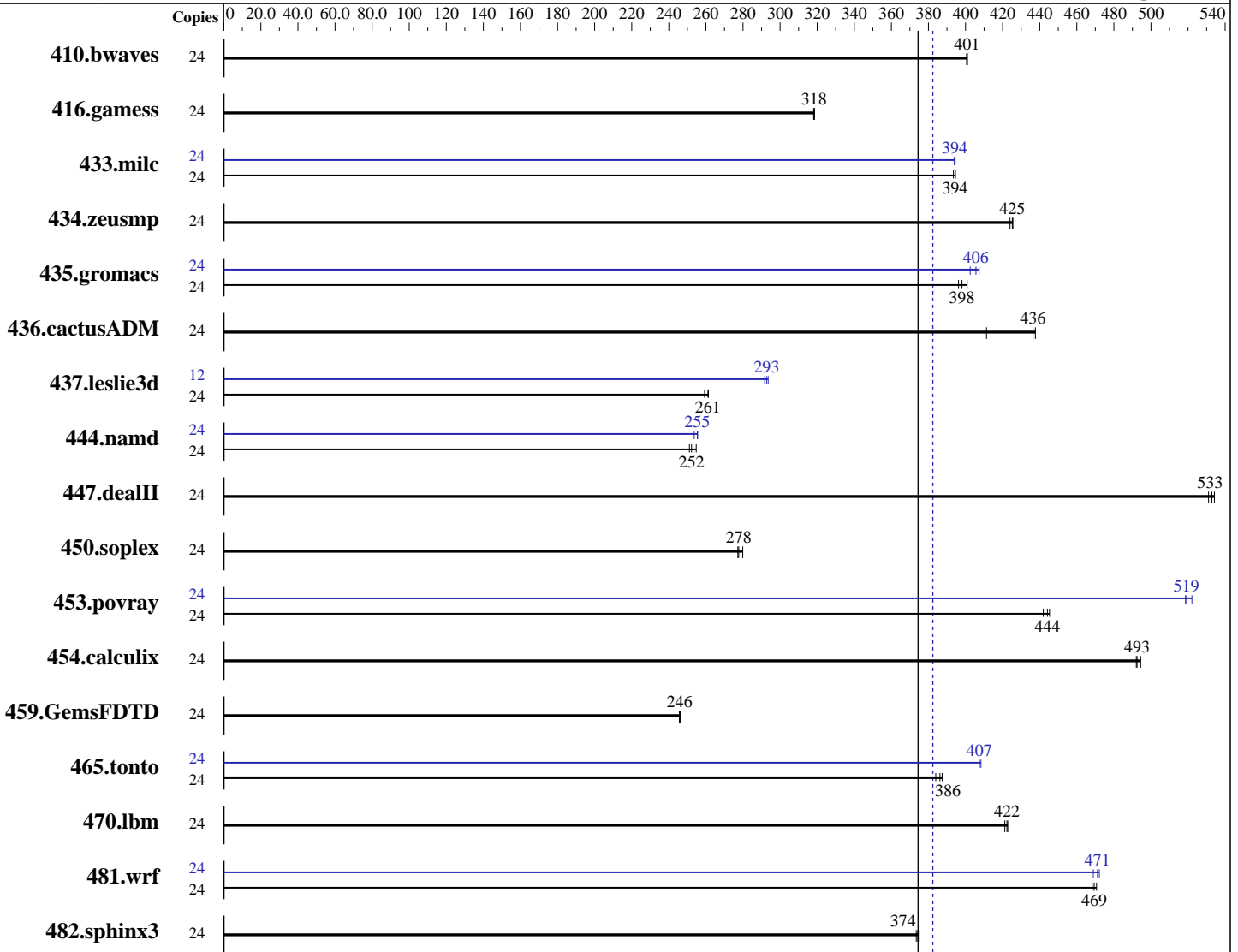$SPECfp\_rate\_base2006 = $ 374

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

**Test date:** Sep-2013
**Hardware Availability:** Sep-2013
**Software Availability:** Sep-2013

| Benchmark | Copies | Result |
|---|---|---|
| 410.bwaves | 24 | 401 |
| 416.gamess | 24 | 318 |
| 433.milc | 24 | 394 |
| 433.milc | 24 | 394 |
| 434.zeusmp | 24 | 425 |
| 435.gromacs | 24 | 406 |
| 435.gromacs | 24 | 398 |
| 436.cactusADM | 24 | 436 |
| 437.leslie3d | 12 | 293 |
| 437.leslie3d | 24 | 261 |
| 444.namd | 24 | 255 |
| 444.namd | 24 | 252 |
| 447.dealII | 24 | 533 |
| 450.soplex | 24 | 278 |
| 453.povray | 24 | 519 |
| 453.povray | 24 | 444 |
| 454.calculix | 24 | 493 |
| 459.GemsFDTD | 24 | 246 |
| 465.tonto | 24 | 407 |
| 465.tonto | 24 | 386 |
| 470.lbm | 24 | 422 |
| 481.wrf | 24 | 471 |
| 481.wrf | 24 | 469 |
| 482.sphinx3 | 24 | 374 |

**SPECfp_rate_base2006 = 374**

**SPECfp_rate2006 = 382**

## Hardware

CPU Name: Intel Xeon E5-2620 v2
CPU Characteristics: Intel Turbo Boost Technology up to 2.60 GHz
CPU MHz: 2100
FPU: Integrated
CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core
CPU(s) orderable: 1,2 chip
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core

**Continued on next page**

## Software

Operating System: SUSE Linux Enterprise Server 11 SP3 (x86_64) 3.0.76-0.11-default
Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux;
Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux
Auto Parallel: No
File System: ext2
System State: Run level 3 (multi-user)

**Continued on next page**

# SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

## Dell Inc.

PowerEdge T620 (Intel Xeon E5-2620 v2, 2.10 GHz)

$SPECfp\_rate2006 = $ 382

$SPECfp\_rate\_base2006 = $ 374

| | |
|---|---|
| **CPU2006 license:** 55 | **Test date:** Sep-2013 |
| **Test sponsor:** Dell Inc. | **Hardware Availability:** Sep-2013 |
| **Tested by:** Dell Inc. | **Software Availability:** Sep-2013 |

| | | | |
|---|---|---|---|
| L3 Cache: | 15 MB I+D on chip per chip | Base Pointers: | 32/64-bit |
| Other Cache: | None | Peak Pointers: | 32/64-bit |
| Memory: | 256 GB (16 x 16 GB 2Rx4 PC3-14900R-13, ECC, running at 1600 MHz) | Other Software: | None |
| Disk Subsystem: | 1 x 300 GB 15000 RPM SAS | | |
| Other Hardware: | None | | |

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 24 | 813 | 401 | 814 | 401 | **814** | **401** | 24 | 813 | 401 | 814 | 401 | **814** | **401** |
| 416.gamess | 24 | **1476** | **318** | 1477 | 318 | 1475 | 319 | 24 | **1476** | **318** | 1477 | 318 | 1475 | 319 |
| 433.milc | 24 | 560 | 393 | **559** | **394** | 558 | 395 | 24 | **559** | **394** | 559 | 394 | 559 | 394 |
| 434.zeusmp | 24 | 513 | 426 | **514** | **425** | 515 | 424 | 24 | 513 | 426 | **514** | **425** | 515 | 424 |
| 435.gromacs | 24 | 427 | 401 | **430** | **398** | 432 | 396 | 24 | 421 | 407 | 426 | 403 | **422** | **406** |
| 436.cactusADM | 24 | 655 | 438 | 697 | 411 | **657** | **436** | 24 | 655 | 438 | 697 | 411 | **657** | **436** |
| 437.leslie3d | 24 | 870 | 259 | 863 | 261 | **864** | **261** | 12 | 387 | 292 | **385** | **293** | 384 | 294 |
| 444.namd | 24 | 755 | 255 | **763** | **252** | 767 | 251 | 24 | 753 | 256 | **754** | **255** | 759 | 254 |
| 447.dealII | 24 | **515** | **533** | 514 | 534 | 517 | 531 | 24 | **515** | **533** | 514 | 534 | 517 | 531 |
| 450.soplex | 24 | 715 | 280 | 722 | 277 | **721** | **278** | 24 | 715 | 280 | 722 | 277 | **721** | **278** |
| 453.povray | 24 | **287** | **444** | 287 | 445 | 289 | 442 | 24 | 246 | 519 | **246** | **519** | 245 | 522 |
| 454.calculix | 24 | 400 | 494 | 402 | 492 | **402** | **493** | 24 | 400 | 494 | 402 | 492 | **402** | **493** |
| 459.GemsFDTD | 24 | **1036** | **246** | 1036 | 246 | 1035 | 246 | 24 | **1036** | **246** | 1036 | 246 | 1035 | 246 |
| 465.tonto | 24 | **612** | **386** | 610 | 387 | 615 | 384 | 24 | 578 | 408 | 580 | 407 | **580** | **407** |
| 470.lbm | 24 | 783 | 421 | **781** | **422** | 780 | 423 | 24 | 783 | 421 | **781** | **422** | 780 | 423 |
| 481.wrf | 24 | 570 | 471 | **571** | **469** | 572 | 468 | 24 | 568 | 472 | 572 | 469 | **569** | **471** |
| 482.sphinx3 | 24 | 1253 | 373 | 1249 | 375 | **1250** | **374** | 24 | 1253 | 373 | 1249 | 375 | **1250** | **374** |

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

## Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

## Dell Inc.

PowerEdge T620 (Intel Xeon E5-2620 v2, 2.10 GHz)

SPECfp_rate2006 =  382

SPECfp_rate_base2006 =  374

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

**Test date:** Sep-2013
**Hardware Availability:** Sep-2013
**Software Availability:** Sep-2013

### Platform Notes

```
BIOS settings:
Virtualization Technology disabled
Execute Disable disabled
Logical Processor enabled
System Profile set to Performance
Sysinfo program /root/cpu2006.1.2.ic13/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on linux Tue Sep 10 23:36:35 2013

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 E5-2620 v2 @ 2.10GHz
      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 3 4 5
      physical 1: cores 0 1 2 3 4 5
   cache size : 15360 KB

From /proc/meminfo
   MemTotal:       264601764 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 11 (x86_64)

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 11 (x86_64)
      VERSION = 11
      PATCHLEVEL = 3

uname -a:
   Linux linux 3.0.76-0.11-default #1 SMP Fri Jun 14 08:21:43 UTC 2013 (ccab990)
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Sep 10 09:57 last=S

SPEC is set to: /root/cpu2006.1.2.ic13
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda2       ext2  267G   34G  233G  13% /

Additional information from dmidecode:
  BIOS Dell Inc. 2.0.19 08/30/2013
```

## Dell Inc.

PowerEdge T620 (Intel Xeon E5-2620 v2, 2.10 GHz)

SPECfp_rate2006 =　　382

SPECfp_rate_base2006 =　374

**CPU2006 license:** 55　　　　　　　　　　　　　　　　　　　　　**Test date:**　Sep-2013
**Test sponsor:**　Dell Inc.　　　　　　　　　　　　　　　　**Hardware Availability:** Sep-2013
**Tested by:**　Dell Inc.　　　　　　　　　　　　　　　　　**Software Availability:**　Sep-2013

## Platform Notes (Continued)

```
    Memory:
     2x 00AD00B300AD HMT42GR7MFR4C-RD 16 GB 1600 MHz
     12x 00AD04B300AD HMT42GR7AFR4C-RD 16 GB 1600 MHz
     2x 00CE00B300CE M393B2G70CB0-CMA 16 GB 1600 MHz

  (End of data from sysinfo program)
```

## General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/cpu2006.1.2.ic13/libs/32:/root/cpu2006.1.2.ic13/libs/64:/root/cpu2006.1.2.ic13/sh"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RHEL5.5
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/transparent_hugepage/enabled
 Filesystem page cache cleared with:
 echo 1>        /proc/sys/vm/drop_caches
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
```

## 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
```

# SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

## Dell Inc.

PowerEdge T620 (Intel Xeon E5-2620 v2, 2.10 GHz)

$SPECfp\_rate2006 =$ 382

$SPECfp\_rate\_base2006 =$ 374

**CPU2006 license:** 55

**Test sponsor:** Dell Inc.

**Tested by:** Dell Inc.

**Test date:** Sep-2013

**Hardware Availability:** Sep-2013

**Software Availability:** Sep-2013

## Base Portability Flags (Continued)

```
    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:
```
    -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
    -ansi-alias -opt-mem-layout-trans=3
```

C++ benchmarks:
```
    -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
    -ansi-alias -opt-mem-layout-trans=3
```

Fortran benchmarks:
```
    -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch
```

Benchmarks using both Fortran and C:
```
    -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
    -ansi-alias -opt-mem-layout-trans=3
```

## 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
```

# SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

## Dell Inc.

PowerEdge T620 (Intel Xeon E5-2620 v2, 2.10 GHz)

SPECfp_rate2006 =      382

SPECfp_rate_base2006 =   374

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

**Test date:**          Sep-2013
**Hardware Availability:** Sep-2013
**Software Availability:** Sep-2013

## Peak Optimization Flags

C benchmarks:

>    433.milc: `-xAVX`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
>          `-no-prec-div`(pass 2) `-opt-mem-layout-trans=3`(pass 2)
>          `-prof-use`(pass 2) `-static -auto-ilp32`

>    470.lbm: basepeak = yes

>    482.sphinx3: basepeak = yes

C++ benchmarks:

>    444.namd: `-xAVX`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
>          `-no-prec-div`(pass 2) `-opt-mem-layout-trans=3`(pass 2)
>          `-prof-use`(pass 2) `-fno-alias -auto-ilp32`

>    447.dealII: basepeak = yes

>    450.soplex: basepeak = yes

>    453.povray: `-xAVX`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
>          `-no-prec-div`(pass 2) `-opt-mem-layout-trans=3`(pass 2)
>          `-prof-use`(pass 2) `-unroll4 -ansi-alias`

Fortran benchmarks:

>    410.bwaves: basepeak = yes

>    416.gamess: basepeak = yes

>    434.zeusmp: basepeak = yes

>    437.leslie3d: `-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch`

>    459.GemsFDTD: basepeak = yes

>    465.tonto: `-xAVX`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
>          `-no-prec-div`(pass 2) `-prof-use`(pass 2) `-unroll4 -auto`
>          `-inline-calloc -opt-malloc-options=3`

Benchmarks using both Fortran and C:

>    435.gromacs: `-xAVX`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
>          `-no-prec-div`(pass 2) `-opt-mem-layout-trans=3`(pass 2)
>          `-prof-use`(pass 2) `-opt-prefetch -static -auto-ilp32`

>    436.cactusADM: basepeak = yes

>    454.calculix: basepeak = yes

Continued on next page

## Dell Inc.

PowerEdge T620 (Intel Xeon E5-2620 v2, 2.10 GHz)

$SPECfp\_rate2006 =$ 382

$SPECfp\_rate\_base2006 =$ 374

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

**Test date:** Sep-2013
**Hardware Availability:** Sep-2013
**Software Availability:** Sep-2013

# Peak Optimization Flags (Continued)

481.wrf: `-xAVX -ipo -O3 -no-prec-div -static -auto-ilp32`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revB.xml

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

Tested with SPEC CPU2006 v1.2.
Report generated on Thu Jul 24 19:00:31 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 22 October 2013.