



# SPEC<sup>®</sup> CFP2006 Result

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Dell Inc.

SPECfp<sup>®</sup>2006 = 67.1

PowerEdge R620 (Intel Xeon E5-2609 v2, 2.50 GHz)

SPECfp\_base2006 = 64.9

CPU2006 license: 55

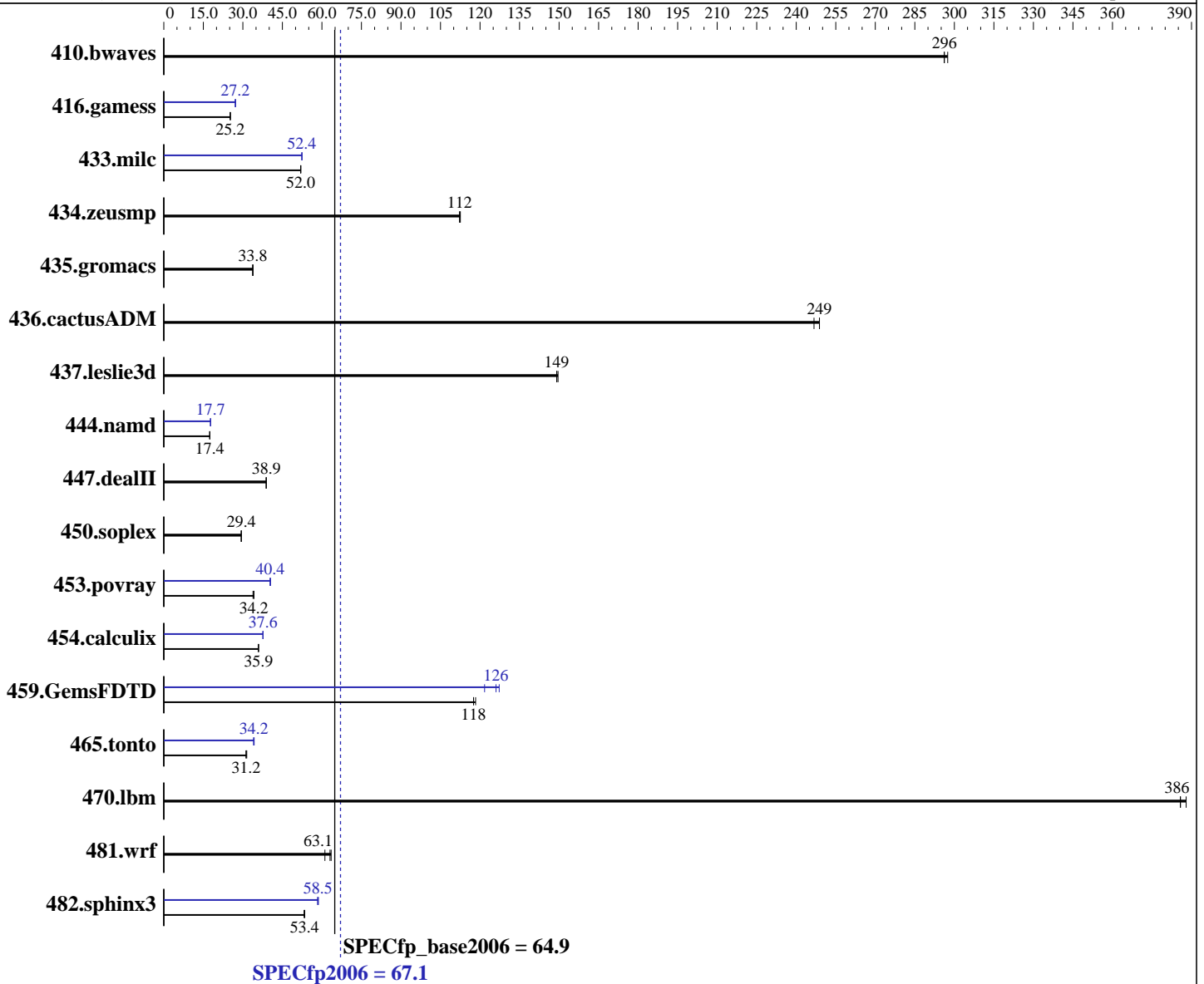
Test date: Sep-2013

Test sponsor: Dell Inc.

Hardware Availability: Sep-2013

Tested by: Dell Inc.

Software Availability: Sep-2013



**Hardware**

CPU Name: Intel Xeon E5-2609 v2  
 CPU Characteristics:  
 CPU MHz: 2500  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip  
 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

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**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: Yes  
 File System: ext2  
 System State: Run level 3 (multi-user)

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L3 Cache: 10 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 256 GB (16 x 16 GB 2Rx4 PC3-14900R-13, ECC, running at 1333 MHz)  
 Disk Subsystem: 1 x 300 GB 15000 RPM SAS  
 Other Hardware: None

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    | <b>45.9</b> | <b>296</b>  | 45.7        | 297         | 45.9       | 296         | <b>45.9</b> | <b>296</b>  | 45.7        | 297         | 45.9        | 296         |
| 416.gamess    | <b>776</b>  | <b>25.2</b> | 777         | 25.2        | 775        | 25.3        | 718         | 27.3        | <b>721</b>  | <b>27.2</b> | 722         | 27.1        |
| 433.milc      | <b>177</b>  | <b>52.0</b> | 177         | 52.0        | 177        | 52.0        | 175         | 52.4        | 175         | 52.4        | <b>175</b>  | <b>52.4</b> |
| 434.zeusmp    | <b>81.1</b> | <b>112</b>  | 81.1        | 112         | 80.9       | 113         | <b>81.1</b> | <b>112</b>  | 81.1        | 112         | 80.9        | 113         |
| 435.gromacs   | 211         | 33.8        | 212         | 33.7        | <b>211</b> | <b>33.8</b> | 211         | 33.8        | 212         | 33.7        | <b>211</b>  | <b>33.8</b> |
| 436.cactusADM | <b>48.0</b> | <b>249</b>  | 48.4        | 247         | 48.0       | 249         | <b>48.0</b> | <b>249</b>  | 48.4        | 247         | 48.0        | 249         |
| 437.leslie3d  | 62.8        | 150         | <b>63.0</b> | <b>149</b>  | 63.0       | 149         | 62.8        | 150         | <b>63.0</b> | <b>149</b>  | 63.0        | 149         |
| 444.namd      | 460         | 17.4        | 460         | 17.4        | <b>460</b> | <b>17.4</b> | <b>452</b>  | <b>17.7</b> | 452         | 17.7        | 452         | 17.7        |
| 447.dealII    | 294         | 38.9        | <b>294</b>  | <b>38.9</b> | 294        | 38.9        | 294         | 38.9        | <b>294</b>  | <b>38.9</b> | 294         | 38.9        |
| 450.soplex    | <b>284</b>  | <b>29.4</b> | 284         | 29.4        | 283        | 29.4        | <b>284</b>  | <b>29.4</b> | 284         | 29.4        | 283         | 29.4        |
| 453.povray    | <b>156</b>  | <b>34.2</b> | 155         | 34.2        | 157        | 33.8        | <b>132</b>  | <b>40.4</b> | 132         | 40.3        | 131         | 40.5        |
| 454.calculix  | <b>230</b>  | <b>35.9</b> | 230         | 35.9        | 230        | 35.9        | 219         | 37.7        | 219         | 37.6        | <b>219</b>  | <b>37.6</b> |
| 459.GemsFDTD  | <b>90.3</b> | <b>118</b>  | 89.7        | 118         | 90.3       | 118         | 87.2        | 122         | 83.4        | 127         | <b>84.2</b> | <b>126</b>  |
| 465.tonto     | 313         | 31.5        | <b>315</b>  | <b>31.2</b> | 315        | 31.2        | 287         | 34.3        | <b>288</b>  | <b>34.2</b> | 289         | 34.1        |
| 470.lbm       | 35.4        | 388         | <b>35.6</b> | <b>386</b>  | 35.6       | 386         | 35.4        | 388         | <b>35.6</b> | <b>386</b>  | 35.6        | 386         |
| 481.wrf       | 176         | 63.5        | 183         | 61.1        | <b>177</b> | <b>63.1</b> | 176         | 63.5        | 183         | 61.1        | <b>177</b>  | <b>63.1</b> |
| 482.sphinx3   | 364         | 53.5        | <b>365</b>  | <b>53.4</b> | 366        | 53.2        | 334         | 58.4        | <b>333</b>  | <b>58.5</b> | 332         | 58.7        |

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

BIOS settings:  
 Virtualization Technology disabled  
 Execute Disable disabled  
 Logical Processor disabled  
 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 Thu Sep 26 15:41:34 2013

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## Platform Notes (Continued)

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 E5-2609 v2 @ 2.50GHz
 2 "physical id"s (chips)
 8 "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    : 4
  siblings     : 4
  physical 0   : cores 0 1 2 3
  physical 1   : cores 0 1 2 3
cache size    : 10240 KB

```

```

From /proc/meminfo
MemTotal:      264634596 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 26 08:05 last=S

```

SPEC is set to: /root/cpu2006.1.2.ic13
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       ext2  267G   29G  238G  11% /

```

```

Additional information from dmidecode:
BIOS Dell Inc. 2.0.19 08/29/2013
Memory:
6x 00AD00B300AD HMT42GR7MFR4C-RD 16 GB 1333 MHz
10x 00AD04B300AD HMT42GR7AFR4C-RD 16 GB 1333 MHz

```

(End of data from sysinfo program)



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## 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"
OMP_NUM_THREADS = "8"
```

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
```

## 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
```



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## Base Optimization Flags

C benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch  
-ansi-alias

C++ benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

Fortran benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xAVX -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: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel

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## Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xAVX(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

447.dealIII: 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) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xAVX(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: -xAVX(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: -xAVX(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: -xAVX -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-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>



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

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