



# SPEC<sup>®</sup> CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Dell Inc.

PowerEdge R820 (Intel Xeon E5-4610 v2, 2.30 GHz)

**SPECfp<sup>®</sup>\_rate2006 = 945**

**SPECfp\_rate\_base2006 = 924**

CPU2006 license: 55

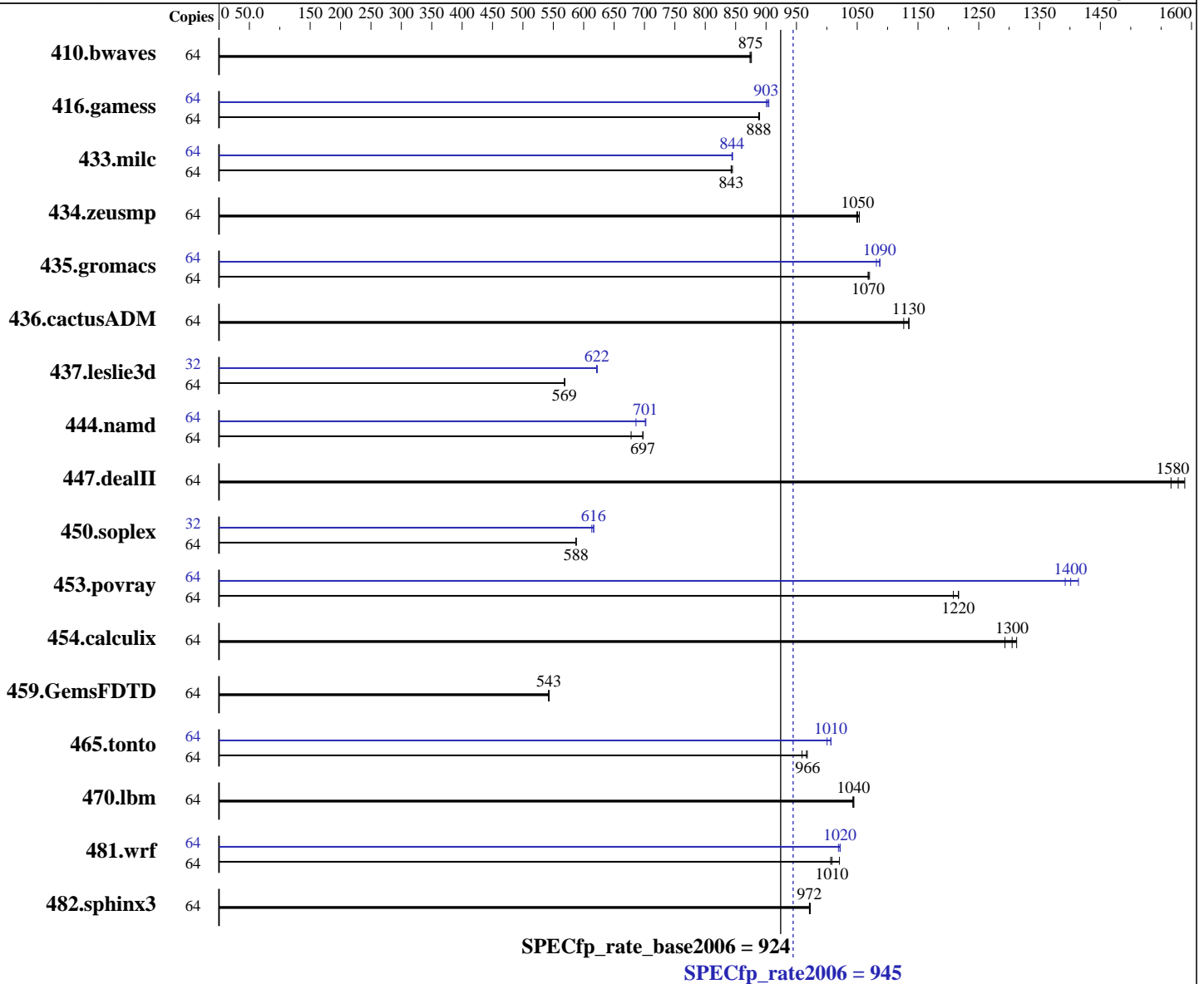
Test sponsor: Dell Inc.

Tested by: Dell Inc.

Test date: Oct-2013

Hardware Availability: Mar-2014

Software Availability: Aug-2013



### Hardware

CPU Name: Intel Xeon E5-4610 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.70 GHz  
 CPU MHz: 2300  
 FPU: Integrated  
 CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip, 2 threads/core  
 CPU(s) orderable: 2,4 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 (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 R820 (Intel Xeon E5-4610 v2, 2.30 GHz)

SPECfp\_rate2006 = 945

SPECfp\_rate\_base2006 = 924

CPU2006 license: 55

Test sponsor: Dell Inc.

Tested by: Dell Inc.

Test date: Oct-2013

Hardware Availability: Mar-2014

Software Availability: Aug-2013

L3 Cache: 16 MB I+D on chip per chip  
Other Cache: None  
Memory: 512 GB (32 x 16 GB 2Rx4 PC3-14900R-13, ECC)  
Disk Subsystem: 1 x 200 GB SAS SSD  
Other Hardware: None

Base Pointers: 32/64-bit  
Peak Pointers: 32/64-bit  
Other Software: None

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	64	993	876	996	874	<b>994</b>	<b>875</b>	64	993	876	996	874	<b>994</b>	<b>875</b>
416.gamess	64	<b>1411</b>	<b>888</b>	1409	889	1411	888	64	<b>1388</b>	<b>903</b>	1385	905	1391	901
433.milc	64	697	843	695	845	<b>697</b>	<b>843</b>	64	696	844	<b>696</b>	<b>844</b>	695	845
434.zeusmp	64	553	1050	555	1050	<b>554</b>	<b>1050</b>	64	553	1050	555	1050	<b>554</b>	<b>1050</b>
435.gromacs	64	427	1070	<b>428</b>	<b>1070</b>	428	1070	64	420	1090	<b>420</b>	<b>1090</b>	422	1080
436.cactusADM	64	679	1130	<b>674</b>	<b>1130</b>	674	1140	64	679	1130	<b>674</b>	<b>1130</b>	674	1140
437.leslie3d	64	1058	568	1058	569	<b>1058</b>	<b>569</b>	32	<b>484</b>	<b>622</b>	484	621	483	622
444.namd	64	757	678	<b>736</b>	<b>697</b>	736	698	64	748	686	731	702	<b>732</b>	<b>701</b>
447.dealII	64	461	1590	<b>464</b>	<b>1580</b>	467	1570	64	461	1590	<b>464</b>	<b>1580</b>	467	1570
450.soplex	64	909	587	<b>908</b>	<b>588</b>	908	588	32	<b>433</b>	<b>616</b>	433	617	435	613
453.povray	64	282	1210	280	1220	<b>280</b>	<b>1220</b>	64	241	1410	245	1390	<b>243</b>	<b>1400</b>
454.calculix	64	402	1310	<b>405</b>	<b>1300</b>	408	1290	64	402	1310	<b>405</b>	<b>1300</b>	408	1290
459.GemsFDTD	64	1253	542	<b>1251</b>	<b>543</b>	1250	543	64	1253	542	<b>1251</b>	<b>543</b>	1250	543
465.tonto	64	651	968	<b>652</b>	<b>966</b>	657	959	64	626	1010	<b>626</b>	<b>1010</b>	630	1000
470.lbm	64	<b>842</b>	<b>1040</b>	843	1040	842	1040	64	<b>842</b>	<b>1040</b>	843	1040	842	1040
481.wrf	64	<b>709</b>	<b>1010</b>	700	1020	710	1010	64	701	1020	699	1020	<b>700</b>	<b>1020</b>
482.sphinx3	64	<b>1284</b>	<b>972</b>	1284	971	1282	973	64	<b>1284</b>	<b>972</b>	1284	971	1282	973

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"

## Platform Notes

BIOS settings:  
Virtualization Technology disabled  
Execute Disable disabled

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Dell Inc.**

**SPECfp\_rate2006 = 945**

PowerEdge R820 (Intel Xeon E5-4610 v2, 2.30 GHz)

**SPECfp\_rate\_base2006 = 924**

**CPU2006 license:** 55

**Test date:** Oct-2013

**Test sponsor:** Dell Inc.

**Hardware Availability:** Mar-2014

**Tested by:** Dell Inc.

**Software Availability:** Aug-2013

## Platform Notes (Continued)

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 Fri Oct 25 23:30:46 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 E5-4610 v2 @ 2.30GHz
 4 "physical id"s (chips)
 64 "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 : 8
siblings : 16
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7
physical 2: cores 0 1 2 3 4 5 6 7
physical 3: cores 0 1 2 3 4 5 6 7
cache size : 16384 KB
```

```
From /proc/meminfo
MemTotal: 529392212 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 Oct 25 09:37 last=S
```

```
SPEC is set to: /root/cpu2006.1.2.ic13
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 ext2 175G 66G 108G 38% /
```

```
Additional information from dmidecode:
BIOS Dell Inc. 2.0.17 10/01/2013
Memory:
32x 00AD00B300AD HMT42GR7AFR4C-RD 16 GB 1600 MHz
Continued on next page
```



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Dell Inc.**

**SPECfp\_rate2006 = 945**

PowerEdge R820 (Intel Xeon E5-4610 v2,  
2.30 GHz)

**SPECfp\_rate\_base2006 = 924**

**CPU2006 license:** 55

**Test date:** Oct-2013

**Test sponsor:** Dell Inc.

**Hardware Availability:** Mar-2014

**Tested by:** Dell Inc.

**Software Availability:** Aug-2013

## Platform Notes (Continued)

(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 RedHat EL 6.4

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  
 450.soplex: -DSPEC\_CPU\_LP64  
 453.povray: -DSPEC\_CPU\_LP64  
 454.calculix: -DSPEC\_CPU\_LP64 -nofor\_main  
 459.GemsFDTD: -DSPEC\_CPU\_LP64

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Dell Inc.**

PowerEdge R820 (Intel Xeon E5-4610 v2,  
2.30 GHz)

**SPECfp\_rate2006 = 945**

**SPECfp\_rate\_base2006 = 924**

**CPU2006 license:** 55

**Test sponsor:** Dell Inc.

**Tested by:** Dell Inc.

**Test date:** Oct-2013

**Hardware Availability:** Mar-2014

**Software Availability:** Aug-2013

## Base Portability Flags (Continued)

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 -opt-prefetch -auto-p32 -ansi-alias  
-opt-mem-layout-trans=3

C++ benchmarks:

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

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

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

## Peak Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks (except as noted below):

icpc -m64

450.soplex: icpc -m32

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Peak Portability Flags

410.bwaves: -DSPEC\_CPU\_LP64  
416.gamess: -DSPEC\_CPU\_LP64  
433.milc: -DSPEC\_CPU\_LP64

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Dell Inc.**

**SPECfp\_rate2006 = 945**

PowerEdge R820 (Intel Xeon E5-4610 v2,  
2.30 GHz)

**SPECfp\_rate\_base2006 = 924**

**CPU2006 license:** 55

**Test date:** Oct-2013

**Test sponsor:** Dell Inc.

**Hardware Availability:** Mar-2014

**Tested by:** Dell Inc.

**Software Availability:** Aug-2013

## Peak Portability Flags (Continued)

```

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
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

```

## 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) -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: -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-malloc-options=3

```

```

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: -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-

```

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Dell Inc.**

PowerEdge R820 (Intel Xeon E5-4610 v2,  
2.30 GHz)

**SPECfp\_rate2006 = 945**

**SPECfp\_rate\_base2006 = 924**

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

**Test date:** Oct-2013  
**Hardware Availability:** Mar-2014  
**Software Availability:** Aug-2013

## Peak Optimization Flags (Continued)

434.zeusmp: basepeak = yes

437.leslie3d: -xAVX -ipo -O3 -no-prec-div -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 -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xAVX -ipo -O3 -no-prec-div -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-revC.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-revC.xml>

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.2.  
Report generated on Thu Jul 24 22:40:35 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 8 April 2014.