



# SPEC<sup>®</sup> CFP2006 Result

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## Dell Inc.

PowerEdge R730 (Intel Xeon E5-2690 v3,  
2.60 GHz)

**SPECfp<sup>®</sup>2006 = 108**

**SPECfp\_base2006 = 103**

CPU2006 license: 55

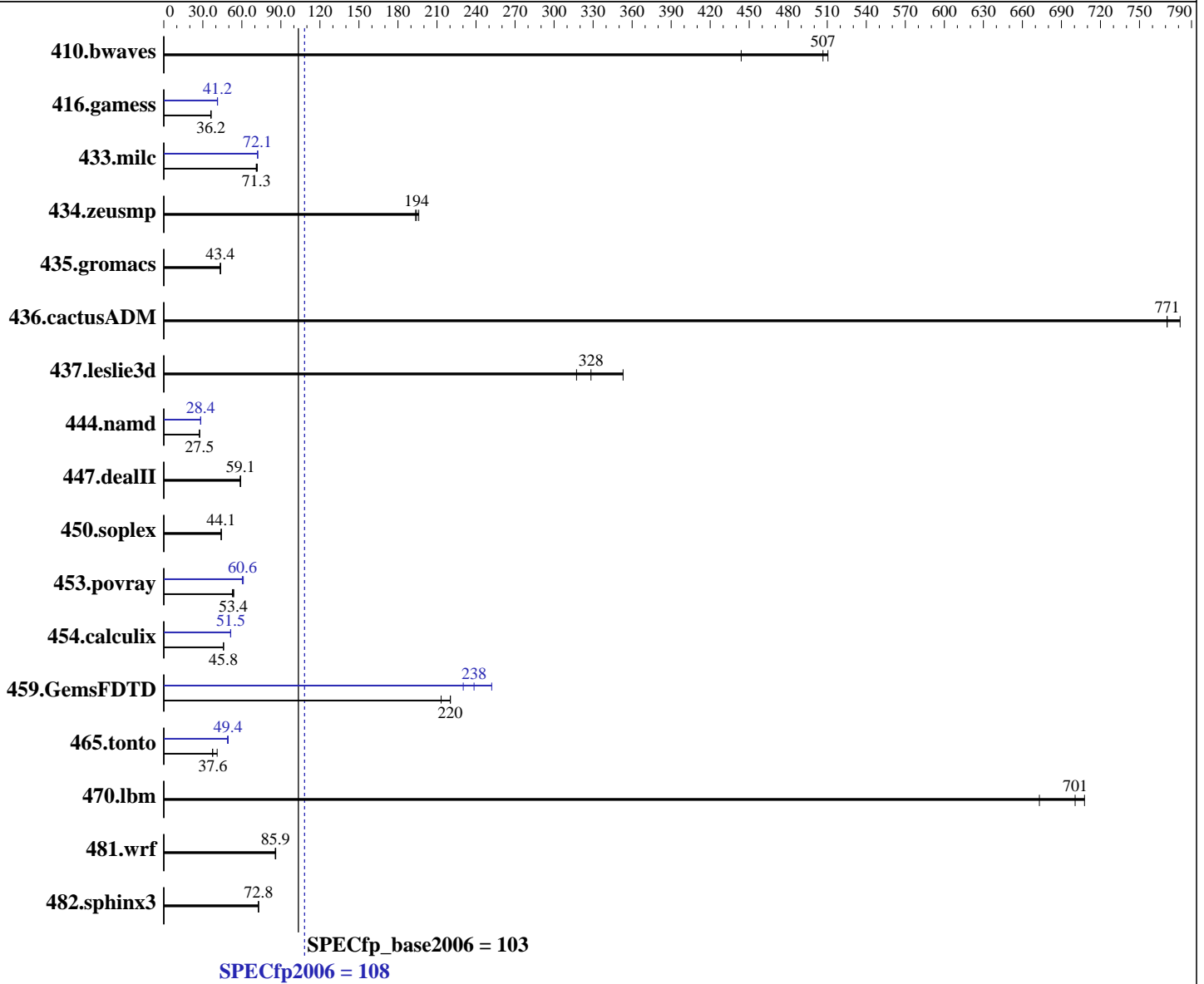
Test sponsor: Dell Inc.

Tested by: Dell Inc.

Test date: Aug-2014

Hardware Availability: Sep-2014

Software Availability: Sep-2014



### Hardware

CPU Name: Intel Xeon E5-2690 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz  
 CPU MHz: 2600  
 FPU: Integrated  
 CPU(s) enabled: 24 cores, 2 chips, 12 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 (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: ext3  
 System State: Run level 3 (multi-user)

Continued on next page



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L3 Cache: 30 MB I+D on chip per chip  
Other Cache: None  
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)  
Disk Subsystem: 1 x 250 GB 7200 RPM SATA  
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	30.6	444	<b><u>26.8</u></b>	<b><u>507</u></b>	26.6	511	30.6	444	<b><u>26.8</u></b>	<b><u>507</u></b>	26.6	511
416.gamess	<b><u>541</u></b>	<b><u>36.2</u></b>	537	36.4	542	36.1	473	41.4	<b><u>475</u></b>	<b><u>41.2</u></b>	475	41.2
433.milc	129	71.1	128	71.9	<b><u>129</u></b>	<b><u>71.3</u></b>	127	72.2	<b><u>127</u></b>	<b><u>72.1</u></b>	127	72.1
434.zeusmp	<b><u>46.8</u></b>	<b><u>194</u></b>	46.4	196	47.0	194	<b><u>46.8</u></b>	<b><u>194</u></b>	46.4	196	47.0	194
435.gromacs	163	43.8	164	43.4	<b><u>164</u></b>	<b><u>43.4</u></b>	163	43.8	164	43.4	<b><u>164</u></b>	<b><u>43.4</u></b>
436.cactusADM	15.3	781	<b><u>15.5</u></b>	<b><u>771</u></b>	15.5	771	15.3	781	<b><u>15.5</u></b>	<b><u>771</u></b>	15.5	771
437.leslie3d	26.6	353	29.6	317	<b><u>28.6</u></b>	<b><u>328</u></b>	26.6	353	29.6	317	<b><u>28.6</u></b>	<b><u>328</u></b>
444.namd	292	27.5	292	27.4	<b><u>292</u></b>	<b><u>27.5</u></b>	283	28.4	<b><u>283</u></b>	<b><u>28.4</u></b>	283	28.4
447.dealII	<b><u>194</u></b>	<b><u>59.1</u></b>	193	59.1	195	58.7	<b><u>194</u></b>	<b><u>59.1</u></b>	193	59.1	195	58.7
450.soplex	188	44.3	<b><u>189</u></b>	<b><u>44.1</u></b>	189	44.1	188	44.3	<b><u>189</u></b>	<b><u>44.1</u></b>	189	44.1
453.povray	<b><u>99.6</u></b>	<b><u>53.4</u></b>	98.9	53.8	101	52.7	87.0	61.1	88.1	60.4	<b><u>87.9</u></b>	<b><u>60.6</u></b>
454.calculix	<b><u>180</u></b>	<b><u>45.8</u></b>	180	45.8	179	46.0	<b><u>160</u></b>	<b><u>51.5</u></b>	161	51.3	160	51.5
459.GemsFDTD	48.2	220	<b><u>48.2</u></b>	<b><u>220</u></b>	49.8	213	46.1	230	<b><u>44.5</u></b>	<b><u>238</u></b>	42.1	252
465.tonto	<b><u>261</u></b>	<b><u>37.6</u></b>	240	41.0	263	37.4	201	49.0	199	49.4	<b><u>199</u></b>	<b><u>49.4</u></b>
470.lbm	20.4	673	<b><u>19.6</u></b>	<b><u>701</u></b>	19.4	708	20.4	673	<b><u>19.6</u></b>	<b><u>701</u></b>	19.4	708
481.wrf	130	85.7	130	86.1	<b><u>130</u></b>	<b><u>85.9</u></b>	130	85.7	130	86.1	<b><u>130</u></b>	<b><u>85.9</u></b>
482.sphinx3	267	72.9	<b><u>268</u></b>	<b><u>72.8</u></b>	268	72.7	267	72.9	<b><u>268</u></b>	<b><u>72.8</u></b>	268	72.7

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:  
Snoop Mode set to Home Snoop  
Virtualization Technology disabled  
Execute Disable disabled  
System Profile set to Custom  
CPU Power Management set to Maximum Performance  
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6818  
\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191  
running on linux-fm7q Thu Aug 21 12:31:37 2014

Continued on next page



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PowerEdge R730 (Intel Xeon E5-2690 v3, 2.60 GHz)

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**CPU2006 license:** 55

**Test date:** Aug-2014

**Test sponsor:** Dell Inc.

**Hardware Availability:** Sep-2014

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**Software Availability:** Sep-2014

## 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 E5-2690 v3 @ 2.60GHz
 2 "physical id"s (chips)
 48 "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    : 12
  siblings     : 24
  physical 0:  cores 0 1 2 3 4 5 8 9 10 11 12 13
  physical 1:  cores 0 1 2 3 4 5 8 9 10 11 12 13
cache size     : 30720 KB

```

```

From /proc/meminfo
MemTotal:      264441052 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-fm7q 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 Aug 20 11:45 last=S

```

SPEC is set to: /root/cpu2006-1.2
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       ext3  228G  11G  216G   5% /

```

```

Additional information from dmidecode:
BIOS Dell Inc. 1.0.2 08/12/2014
Memory:
4x 00AD00B300AD HMA42GR7MFR4N-TFTD 16 GB 2133 MHz
6x 00AD063200AD HMA42GR7MFR4N-TFT1 16 GB 2133 MHz
6x 00CE00B300CE M393A2G40DB0-CPB 16 GB 2133 MHz
8x Not Specified Not Specified

```

(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/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh"
OMP_NUM_THREADS = "24"
```

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
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:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch  
-ansi-alias

C++ benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xCORE-AVX2 -ipo -O3 -no-prec-div -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: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-auto-ilp32 -ansi-alias

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

Continued on next page



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## Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(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-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2 -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-revC.html>

<http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revD.html>



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<http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revD.xml>

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

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