## SPEC® CFP2006 Result

### Dell Inc.

PowerEdge R730 (Intel Xeon E5-2683 v3, 2.00 GHz)

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>SPECfp_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>95.4</td>
<td>91.3</td>
</tr>
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</table>

**CPU2006 license:** 55  
**Test date:** Aug-2014  
**Hardware Availability:** Sep-2014

**Test sponsor:** Dell Inc.  
**Tested by:** Dell Inc.

**Software Availability:** Sep-2014

### Hardware

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2683 v3</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.00 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2000</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>28 cores, 2 chips, 14 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1.2 chip</td>
</tr>
<tr>
<td>Primary Cache</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>256 KB I+D on chip per core</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>SUSE Linux Enterprise Server 11 (x86_64) 3.0.76-0.11-default</td>
</tr>
<tr>
<td>Compiler</td>
<td>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</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>File System</td>
<td>ext3</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
</tbody>
</table>

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Continued on next page
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L3 Cache: 35 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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th></th>
<th>Peak</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seconds</td>
<td>Ratio</td>
<td>Seconds</td>
<td>Ratio</td>
</tr>
<tr>
<td>410.bwaves</td>
<td>27.2</td>
<td>499</td>
<td>27.0</td>
<td>503</td>
</tr>
<tr>
<td>416.gameess</td>
<td>623</td>
<td>31.4</td>
<td>622</td>
<td>31.5</td>
</tr>
<tr>
<td>433.milc</td>
<td>147</td>
<td>62.5</td>
<td>145</td>
<td>63.2</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>52.4</td>
<td>174</td>
<td>52.2</td>
<td>174</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>198</td>
<td>36.1</td>
<td>201</td>
<td>35.5</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>19.7</td>
<td>606</td>
<td>17.3</td>
<td>690</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>27.2</td>
<td>345</td>
<td>28.0</td>
<td>335</td>
</tr>
<tr>
<td>444.namd</td>
<td>341</td>
<td>23.5</td>
<td>341</td>
<td>23.5</td>
</tr>
<tr>
<td>447.dealII</td>
<td>227</td>
<td>50.3</td>
<td>227</td>
<td>50.3</td>
</tr>
<tr>
<td>450.soplex</td>
<td>219</td>
<td>38.1</td>
<td>218</td>
<td>38.2</td>
</tr>
<tr>
<td>453.povray</td>
<td>116</td>
<td>46.0</td>
<td>119</td>
<td>44.7</td>
</tr>
<tr>
<td>454.calculix</td>
<td>215</td>
<td>38.4</td>
<td>219</td>
<td>37.7</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>52.4</td>
<td>203</td>
<td>52.2</td>
<td>203</td>
</tr>
<tr>
<td>465.tonto</td>
<td>290</td>
<td>34.0</td>
<td>317</td>
<td>31.0</td>
</tr>
<tr>
<td>470.lbm</td>
<td>20.0</td>
<td>686</td>
<td>22.2</td>
<td>618</td>
</tr>
<tr>
<td>481.wrf</td>
<td>147</td>
<td>76.1</td>
<td>144</td>
<td>77.5</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>326</td>
<td>59.7</td>
<td>319</td>
<td>61.0</td>
</tr>
</tbody>
</table>

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 Fri Aug 22 16:10:34 2014

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Dell Inc.
PowerEdge R730 (Intel Xeon E5-2683 v3, 2.00 GHz)

SPECfp2006 = 95.4
SPECfp_base2006 = 91.3

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

Test date: Aug-2014
Hardware Availability: Sep-2014
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 E5-2683 v3 @ 2.00GHz
- 2 "physical id"s (chips)
- 56 "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 : 14
- siblings : 28
- physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
- physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
- cache size : 35840 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 22 09:52 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)
SPEC CFP2006 Result

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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 = "28"

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
Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xCORE-AVX2 (pass 2) -prof-gen (pass 1) -ipo (pass 2)
-03 (pass 2) -no-prec-div (pass 2) -prof-use (pass 2)
-fno-alias -auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2 (pass 2) -prof-gen (pass 1) -ipo (pass 2)
-03 (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)
-03 (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)
-03 (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)
-03 (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/Dell-Platform-Settings-V1.2-revD.html
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You can also download the XML flags sources by saving the following links:
- [http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-rev0.xml](http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-rev0.xml)

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

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