## SPEC® CFP2006 Result

**Dell Inc.**

**PowerEdge FC430 (Intel Xeon E5-2660 v3, 2.60 GHz)**

| SPECfp®2006 | 112 |
| SPECfp_base2006 | 108 |

**CPU2006 license:** 55

**Test sponsor:** Dell Inc.

**Tested by:** Dell Inc.

**Hardware Availability:** Apr-2015

**Software Availability:** Apr-2015

### SPECfp2006 Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECfp2006</th>
<th>SPECfp_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>40.3</td>
<td></td>
</tr>
<tr>
<td>416.gamess</td>
<td>36.1</td>
<td></td>
</tr>
<tr>
<td>433.milc</td>
<td>68.9</td>
<td></td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>205</td>
<td></td>
</tr>
<tr>
<td>435.gromacs</td>
<td>44.1</td>
<td></td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>875</td>
<td></td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>389</td>
<td></td>
</tr>
<tr>
<td>444.namd</td>
<td>28.7</td>
<td></td>
</tr>
<tr>
<td>447.dealII</td>
<td>53.0</td>
<td></td>
</tr>
<tr>
<td>450.soplex</td>
<td>43.1</td>
<td></td>
</tr>
<tr>
<td>453.povray</td>
<td>59.9</td>
<td></td>
</tr>
<tr>
<td>454.calculix</td>
<td>52.6</td>
<td></td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>55.2</td>
<td></td>
</tr>
<tr>
<td>465.tonto</td>
<td>49.4</td>
<td></td>
</tr>
<tr>
<td>470.lbm</td>
<td>40.3</td>
<td></td>
</tr>
<tr>
<td>481.wrf</td>
<td>75.4</td>
<td></td>
</tr>
<tr>
<td>482.sphinx3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CPU Name:** Intel Xeon E5-2660 v3

**CPU Characteristics:** Intel Turbo Boost Technology up to 3.30 GHz

**CPU MHz:** 2600

**FPU:** Integrated

**CPU(s) enabled:** 20 cores, 2 chips, 10 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

**Operating System:** SUSE Linux Enterprise Server 12 3.12.28-4-default

**Compiler:**
- C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux;
- Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux

**Auto Parallel:** Yes

**File System:** ext4

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

---

Continued on next page

Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/
Dell Inc.

PowerEdge FC430 (Intel Xeon E5-2660 v3, 2.60 GHz)

**SPECfp2006** = 112
**SPECfp_base2006** = 108

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>27.9</td>
<td>487</td>
<td>28.4</td>
<td>479</td>
<td>27.1</td>
<td>502</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>416.gamess</td>
<td>543</td>
<td>36.1</td>
<td>543</td>
<td>36.1</td>
<td>545</td>
<td>35.9</td>
<td>487</td>
<td>40.2</td>
<td>486</td>
<td>40.3</td>
</tr>
<tr>
<td>433.milc</td>
<td>137</td>
<td>66.9</td>
<td>132</td>
<td>69.5</td>
<td>133</td>
<td>68.9</td>
<td>137</td>
<td>66.9</td>
<td>132</td>
<td>69.5</td>
</tr>
<tr>
<td>434.zu Kemp</td>
<td>44.3</td>
<td>205</td>
<td>44.3</td>
<td>205</td>
<td>44.6</td>
<td>204</td>
<td>44.3</td>
<td>205</td>
<td>44.3</td>
<td>205</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>162</td>
<td>44.1</td>
<td>162</td>
<td>44.1</td>
<td>162</td>
<td>44.1</td>
<td>162</td>
<td>44.1</td>
<td>162</td>
<td>44.1</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>13.4</td>
<td>893</td>
<td>13.7</td>
<td>875</td>
<td>13.7</td>
<td>874</td>
<td>13.4</td>
<td>893</td>
<td>13.7</td>
<td>875</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>24.2</td>
<td>389</td>
<td>23.8</td>
<td>395</td>
<td>24.5</td>
<td>383</td>
<td>24.2</td>
<td>389</td>
<td>23.8</td>
<td>395</td>
</tr>
<tr>
<td>444.namd</td>
<td>287</td>
<td>28.0</td>
<td>287</td>
<td>28.0</td>
<td>287</td>
<td>27.9</td>
<td>279</td>
<td>28.7</td>
<td>279</td>
<td>28.7</td>
</tr>
<tr>
<td>447.dealII</td>
<td>217</td>
<td>52.7</td>
<td>215</td>
<td>53.2</td>
<td>216</td>
<td>53.0</td>
<td>217</td>
<td>52.7</td>
<td>215</td>
<td>53.2</td>
</tr>
<tr>
<td>450.soplex</td>
<td>193</td>
<td>43.3</td>
<td>194</td>
<td>43.1</td>
<td>197</td>
<td>42.2</td>
<td>193</td>
<td>43.3</td>
<td>194</td>
<td>43.1</td>
</tr>
<tr>
<td>453.povray</td>
<td>103</td>
<td>51.7</td>
<td>101</td>
<td>52.6</td>
<td>99.9</td>
<td>53.2</td>
<td>88.8</td>
<td>59.9</td>
<td>88.1</td>
<td>60.4</td>
</tr>
<tr>
<td>454.calculix</td>
<td>160</td>
<td>51.4</td>
<td>160</td>
<td>51.5</td>
<td>161</td>
<td>51.2</td>
<td>149</td>
<td>55.2</td>
<td>151</td>
<td>54.8</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>45.3</td>
<td>234</td>
<td>45.2</td>
<td>235</td>
<td>44.3</td>
<td>239</td>
<td>39.0</td>
<td>272</td>
<td>38.8</td>
<td>273</td>
</tr>
<tr>
<td>465.tonto</td>
<td>244</td>
<td>40.3</td>
<td>244</td>
<td>40.3</td>
<td>248</td>
<td>39.7</td>
<td>201</td>
<td>49.1</td>
<td>199</td>
<td>49.4</td>
</tr>
<tr>
<td>470.lbm</td>
<td>21.3</td>
<td>647</td>
<td>22.3</td>
<td>617</td>
<td>20.7</td>
<td>663</td>
<td>21.3</td>
<td>647</td>
<td>22.3</td>
<td>617</td>
</tr>
<tr>
<td>481.wrf</td>
<td>95.5</td>
<td>117</td>
<td>95.1</td>
<td>117</td>
<td>94.5</td>
<td>118</td>
<td>95.5</td>
<td>117</td>
<td>95.1</td>
<td>117</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>259</td>
<td>75.4</td>
<td>268</td>
<td>72.9</td>
<td>258</td>
<td>75.5</td>
<td>259</td>
<td>75.4</td>
<td>268</td>
<td>72.9</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
System Profile set to Custom
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1 running on linux-8qjr Wed Jan 21 18:25:19 2015

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see: Continued on next page
SPEC CFP2006 Result

Dell Inc.

PowerEdge FC430 (Intel Xeon E5-2660 v3, 2.60 GHz)

SPECfp2006 = 112
SPECfp_base2006 = 108

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

Test date: Jan-2015
Hardware Availability: Apr-2015
Software Availability: Apr-2015

Platform Notes (Continued)

http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo

    model name : Intel(R) Xeon(R) CPU E5-2660 v3 @ 2.60GHz
    2 "physical id"s (chips)
    40 "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 : 10
    siblings : 20
    physical 0: cores 0 1 2 3 4 8 9 10 11 12
    physical 1: cores 0 1 2 3 4 8 9 10 11 12
    cache size : 25600 KB

From /proc/meminfo

    MemTotal:       132187004 kB
    HugePages_Total:       0
    Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
    SUSE Linux Enterprise Server 12

From /etc/*release*/etc/*version*

    SuSE-release:
    SUSE Linux Enterprise Server 12 (x86_64)
    VERSION = 12
    PATCHLEVEL = 0
    # This file is deprecated and will be removed in a future service pack or 
    release.
    # Please check /etc/os-release for details about this release.
    os-release:
    NAME="SLES"
    VERSION="12"
    VERSION_ID="12"
    PRETTY_NAME="SUSE Linux Enterprise Server 12"
    ID="sles"
    ANSI_COLOR="0;32"
    CPE_NAME="cpe:/o:suse:sles:12"

uname -a:
    Linux linux-8qjr 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
    (9879bd4) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jan 21 11:52

SPEC is set to: /root/cpu2006-1.2
    Filesystem  Type      Size  Used Avail Use% Mounted on
    /dev/sda2   ext4      176G  11G  165G  6% /

Additional information from dmidecode:

    Warning: Use caution when you interpret this section. The 'dmidecode' program

Continued on next page
SPEC CFP2006 Result

Dell Inc.
PowerEdge FC430 (Intel Xeon E5-2660 v3, 2.60 GHz)

SPECfp2006 = 112
SPECfp_base2006 = 108

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

Test date: Jan-2015
Hardware Availability: Apr-2015
Software Availability: Apr-2015

Platform Notes (Continued)

reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Dell Inc. 0.4.0 01/08/2015
Memory:
8x 00CE00B300CE M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/root/cpu2006-1.2/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh"
OMP_NUM_THREADS = "20"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB memory using RedHat EL 7.0
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled

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
Dell Inc.  

PowerEdge FC430 (Intel Xeon E5-2660 v3, 2.60 GHz)  

**SPECfp2006 = 112**  
**SPECfp_base2006 = 108**

- **CPU2006 license:** 55  
- **Test date:** Jan-2015
- **Test sponsor:** Dell Inc.  
- **Hardware Availability:** Apr-2015
- **Tested by:** Dell Inc.  
- **Software Availability:** Apr-2015

### Base Portability Flags (Continued)

- 447.dealII: -DSPEC_CPU_LP64  
- 450.soplex: -DSPEC_CPU_LP64  
- 453.povray: -DSPEC_CPU_LP64  
- 454.calculix: -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:**  
  -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
Dell Inc. PowerEdge FC430 (Intel Xeon E5-2660 v3, 2.60 GHz) SPECfp2006 = 112 SPECfp_base2006 = 108

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

Test date: Jan-2015
Hardware Availability: Apr-2015
Software Availability: Apr-2015

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes
470.lbm: basepeak = yes
482.sphinx3: basepeak = yes

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.dealII: 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-callloc -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

Continued on next page
### Dell Inc.

**PowerEdge FC430 (Intel Xeon E5-2660 v3, 2.60 GHz)**

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>112</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>108</td>
</tr>
</tbody>
</table>

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

**Test date:** Jan-2015  
**Hardware Availability:** Apr-2015  
**Software Availability:** Apr-2015

---

#### Peak Optimization Flags (Continued)

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-ic15.0-official-linux64.html](http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.html)

You can also download the XML flags sources by saving the following links:

- [http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml](http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.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.

Tested with SPEC CPU2006 v1.2.  
Originally published on 16 April 2015.