### SPEC® CFP2006 Result

**Dell Inc.**

PowerEdge FC830 (Intel Xeon E5-4650 v3, 2.10 GHz)

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>99.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>94.2</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>748.4</td>
</tr>
<tr>
<td>416.gamess</td>
<td>35.6</td>
</tr>
<tr>
<td>433.milc</td>
<td>62.0</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>148.0</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>33.3</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>654.0</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>226.0</td>
</tr>
<tr>
<td>444.namd</td>
<td>24.4</td>
</tr>
<tr>
<td>447.dealII</td>
<td>45.8</td>
</tr>
<tr>
<td>450.soplex</td>
<td>38.4</td>
</tr>
<tr>
<td>453.povray</td>
<td>53.5</td>
</tr>
<tr>
<td>454.calculix</td>
<td>41.8</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>249.0</td>
</tr>
<tr>
<td>465.tonto</td>
<td>43.6</td>
</tr>
<tr>
<td>470.lbm</td>
<td>95.9</td>
</tr>
<tr>
<td>481.wrf</td>
<td>58.6</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>58.6</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon E5-4650 v3
- **CPU Characteristics:** Intel Turbo Boost Technology up to 2.80 GHz
- **CPU MHz:** 2100
- **FPU:** Integrated
- **CPU(s) enabled:** 48 cores, 4 chips, 12 cores/chip, 2 threads/core
- **CPU(s) orderable:** 4 chip
- **Primary Cache:** 32 KB I + 32 KB D on chip per core
- **Secondary Cache:** 256 KB I+D on chip per core

**Software**

- **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)
The SPEC CFP2006 Result

Dell Inc.

PowerEdge FC830 (Intel Xeon E5-4650 v3, 2.10 GHz)

**SPECfp2006** = 99.6

**SPECfp_base2006** = 94.2

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

L3 Cache: 30 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (32 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem: 1 x 400 GB 7200 RPM SATA
Other Hardware: None

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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seconds</td>
<td>Ratio</td>
</tr>
<tr>
<td>410bwaves</td>
<td>17.3</td>
<td>786</td>
</tr>
<tr>
<td>416game</td>
<td>650</td>
<td>30.1</td>
</tr>
<tr>
<td>433milc</td>
<td>148</td>
<td>62.0</td>
</tr>
<tr>
<td>434zeusmp</td>
<td>61.3</td>
<td>148</td>
</tr>
<tr>
<td>435gromacs</td>
<td>214</td>
<td>33.3</td>
</tr>
<tr>
<td>436cactus</td>
<td>18.5</td>
<td>647</td>
</tr>
<tr>
<td>437leslie3d</td>
<td>44.8</td>
<td>210</td>
</tr>
<tr>
<td>444namd</td>
<td>338</td>
<td>23.7</td>
</tr>
<tr>
<td>447dealII</td>
<td>250</td>
<td>45.8</td>
</tr>
<tr>
<td>450soplex</td>
<td>217</td>
<td>38.4</td>
</tr>
<tr>
<td>453povray</td>
<td>111</td>
<td>47.8</td>
</tr>
<tr>
<td>454calculix</td>
<td>197</td>
<td>41.8</td>
</tr>
<tr>
<td>459GemsFDTD</td>
<td>56.4</td>
<td>188</td>
</tr>
<tr>
<td>465tonto</td>
<td>327</td>
<td>30.1</td>
</tr>
<tr>
<td>470lbm</td>
<td>12.0</td>
<td>1150</td>
</tr>
<tr>
<td>481wrf</td>
<td>115</td>
<td>97.5</td>
</tr>
<tr>
<td>482sphinx3</td>
<td>333</td>
<td>58.6</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 Performance
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914

$Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1
running on linux-3aq4 Thu Feb 12 00:45:27 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
Dell Inc.

PowerEdge FC830 (Intel Xeon E5-4650 v3, 2.10 GHz)  

SPECfp2006 = 99.6  
SPECfp_base2006 = 94.2

CPU2006 license: 55  
Test sponsor: Dell Inc.  
Tested by: Dell Inc.  
Test date: Feb-2015  
Hardware Availability: Jun-2015  
Software Availability: Jun-2015

Platform Notes (Continued)

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

From /proc/cpuinfo

model name : Intel(R) Xeon(R) CPU E5-4650 v3 @ 2.10GHz 
4 "physical id"s (chips) 
96 "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
physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 13

cache size : 30720 KB

From /proc/meminfo

MemTotal: 529334376 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-3aq4 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 Feb 11 18:16 last=5

SPEC is set to: /root/cpu2006-1.2

Additional information from dmidecode:  
Continued on next page
SPEC CFP2006 Result

Dell Inc.

PowerEdge FC830 (Intel Xeon E5-4650 v3, 2.10 GHz)

SPECfp2006 = 99.6
SPECfp_base2006 = 94.2

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

Test date: Feb-2015
Hardware Availability: Jun-2015
Software Availability: Jun-2015

Platform Notes (Continued)

Warning: Use caution when you interpret this section. The 'dmidecode' program 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:
32x 00CE00B300CE M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
16x Not Specified Not Specified

(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 = "48"

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

Continued on next page
SPEC CFP2006 Result

Dell Inc.

PowerEdge FC830 (Intel Xeon E5-4650 v3, 2.10 GHz)

SPECfp2006 = 99.6
SPECfp_base2006 = 94.2

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

Test date: Feb-2015
Hardware Availability: Jun-2015
Software Availability: Jun-2015

Base Portability Flags (Continued)

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

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
Dell Inc.  
PowerEdge FC830 (Intel Xeon E5-4650 v3, 2.10 GHz)  

SPECfp2006 = 99.6  
SPECfp_base2006 = 94.2

CPU2006 license: 55  
Test sponsor: Dell Inc.  
Tested by: Dell Inc.  
Test date: Feb-2015

Hardware Availability: Jun-2015  
Software Availability: Jun-2015

Peak Portability Flags

Same as Base Portability Flags

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)  
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) 
-fno-alias -auto-llvm32

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:

Continued on next page
Dell Inc.

PowerEdge FC830 (Intel Xeon E5-4650 v3, 2.10 GHz)

SPECfp2006 = 99.6
SPECfp_base2006 = 94.2

Peak Optimization Flags (Continued)

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-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/Dell-Platform-Settings-V1.2-revE.20150421.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 2 June 2015.